5-3825-213-10

# TM 5-3825-213-10

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

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OPERATOR'S MANUAL

# SNOW REMOVAL UNIT, SELF-PROPELLED: GASOLINE DRIVEN; ROTARY; WHEEL MTD; WINTERIZED

(FWD MODEL S-349-V)

SERIAL NUMBERS G30681 THROUGH G30690 AND
G30750 THROUGH G30759 FSN 3825-810-7074

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*HEADQUARTERS, DEPARTMENT OF THE ARMY*
*DECEMBER 1961*

D 101. 11:

READEX FICHE best copy available

# SAFETY PRECAUTIONS

## Before Operation

Always correct or report any condition to organizational maintenance that may result in injury to personnel if operation is continued.

Before starting the engines make sure that all operating levers are in the neutral or disengaged position.

Before starting engines or operating any of the snow removal unit components, see that no loose bars, tools, or parts are lying in or on any part of the equipment, as they could cause serious damage to the equipment or bodily injury to personnel.

Never fill the fuel tank while the engine is running. Be sure there are no open flames which may ignite the fuel vapor while filling the tank. Always provide a metal-to-metal contact between the fuel container and fuel tank to avoid igniting the fuel vapors with a static spark. Be sure the plow is in a lowered position to assure grounding of the equipment.

Keep walkways and decks free of grease, oil, ice, and mud to prevent slipping and falling.

Exercise care when servicing the batteries to prevent electrolyte from splashing on skin or clothing. If electrolyte is spilled on skin or clothing, wash the contaminated skin area and change clothing.

Make certain that all personnel are clear of the snow removal unit before starting plowing operation as serious injury or death could result.

Ether is highly explosive and toxic. Handle ether capsules with extreme caution to prevent their rupture until they are installed in capsule chamber. Strict observance of this precaution will help prevent explosion, fire, and injury to personnel.

## During Operation

Do not clean, adjust, or lubricate the components of the snow removal unit during operation.

Use extreme care in removing the radiator cap from an overheated engine. Hot coolant may cause bodily injury.

Never get on or off the snow removal unit when it is in motion.

## After Operation

Always correct or report any condition to organizational maintenance that may result in injury to personnel if operation is continued.

Stop all operation when cleaning, adjusting, or lubricating the components of the snow removal unit.

Never fill the fuel tank while the engine is running. Be sure there are no open flames which may ignite the fuel vapor while filling the fuel tank. Always provide a metal-to-metal contact between the fuel container and fuel tank to avoid igniting the fuel vapor with static spark. Be sure the plow is in lowered position to assure grounding of the equipment.

Use handrails to avoid falling from the snow removal unit.

Use extreme caution in removing the radiator cap from an overheated engine. Hot coolant may cause bodily injury.

TECHNICAL MANUAL
No. 5-3825-213-10

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., *21 December 1961*

# Operator's Manual

# SNOW REMOVAL UNIT, SELF-PROPELLED: GASOLINE DRIVEN; ROTARY; WHEEL MTD; WINTERIZED (FWD MODEL S-349-V) SERIAL NUMBERS G30681 THROUGH G30690 AND G30750 THROUGH G30759, FSN 3825-810-7074

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# CHAPTER I
# INTRODUCTION

## Section I. GENERAL

### 1. Scope

*a.* This manual is published for the use of the personnel to whom the FWD MODEL S-349-V Snow Removal Unit is issued. It provides information of the operation, lubrication, and preventive maintenance services of the equipment, accessories, components, and attachments.

*b.* Appendix I contains a list of publications applicable to this manual. Appendix II contains the basic issue items authorized for the use by the operator. The maintenance allocation chart is contained in TM 5-3825-213-20.

*c.* Numbers in parentheses on illustrations indicate quantity. Numbers preceding nomenclature callouts on illustrations indicate the preferred maintenance sequence.

*d.* Report all deficiencies in this manual on DA Form 2028. Submit recommendations for changes, additions, or deletions to the Commanding General, Military Construction Supply Agency/U.S. Army Engineer Maintenance Center, Corps of Engineers, ATTN: MCSDM, P.O. Box 119, Columbus 16, Ohio. Direct communication is authorized.

*e.* Report unsatisfactory equipment performance and suggestions for equipment improvement to the organizational unit for initiating necessary corrective action.

### 2. Record and Report Forms

For record and report forms applicable to the operator, refer to TM 5-505.

*Note.* Applicable forms, excluding standard Form 46 which is carried by the operator, will be kept in a canvas bag mounted on the equipment.

## Section II. DESCRIPTION AND DATA

### 3. Description

*a. General.* The FWD Snow Removal Unit, Model S-349-V (figs. 1-3) is a truck-mounted, rotary snowplow driven by a gasoline engine power unit. The plow and its power unit are mounted on a gasoline-engine-driven carrier. The snow removal unit is designed to operate under conditions of extreme cold and to perform functions such as clearing roads and airfield runways. As a safety precaution, a rotating warning beacon is mounted on top of the operator's cab.

*b. Snowplow.* The augers break up the snow and feed it to the fan located behind the augers. The fan expels the snow through the snow direction chute when the blower housing is in the upright position. By rotating and raising and lowering the snow direction chute, the direction and distance to which the snow will be expelled is controlled. By turning the fan blower housing to the left or right and not using the snow direction chute, snow may be expelled a greater distance over a much larger area. The side cutters are used to break up high snow drifts. The plow assembly is raised and lowered hydraulically, to control the depth of the cut. The minimum height of the moldboard blade is set by adjusting the plow shoe adjustment shaft.

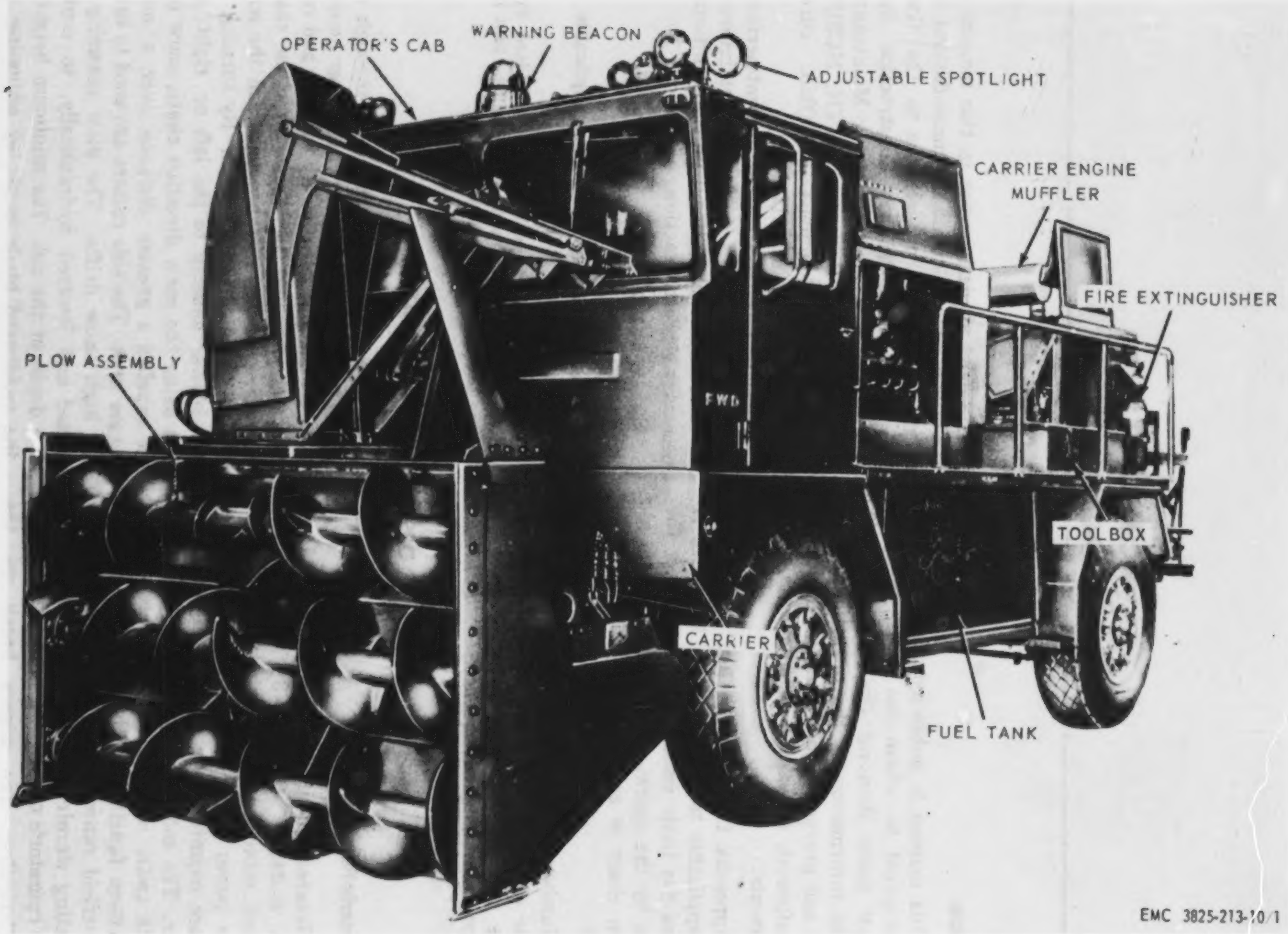
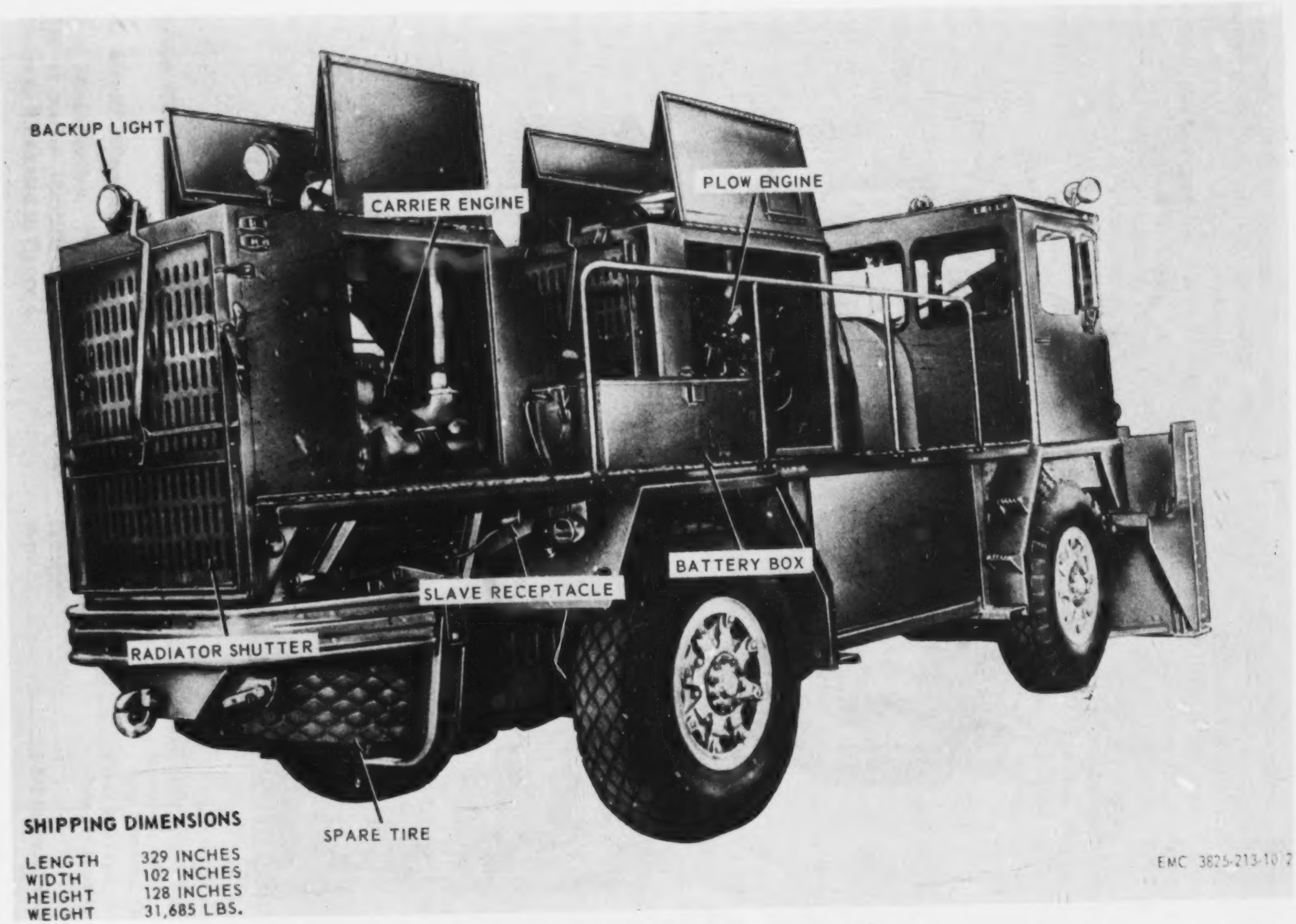

OPERATOR'S CAB
WARNING BEACON
ADJUSTABLE SPOTLIGHT
CARRIER ENGINE MUFFLER
FIRE EXTINGUISHER
PLOW ASSEMBLY
TOOLBOX
CARRIER
FUEL TANK
EMC 3825-213-10/1

*Figure 1. Snow removal unit, left front three-quarter view.*


BACKUP LIGHT
CARRIER ENGINE
PLOW ENGINE
BATTERY BOX
SLAVE RECEPTACLE
RADIATOR SHUTTER
SPARE TIRE
EMC 3825-213-10/2

**SHIPPING DIMENSIONS**

| | |
|---|---|
| LENGTH | 329 INCHES |
| WIDTH | 102 INCHES |
| HEIGHT | 128 INCHES |
| WEIGHT | 31,685 LBS. |

*Figure 2. Snow removal unit, right rear three-quarter view, and shipping dimensions.*

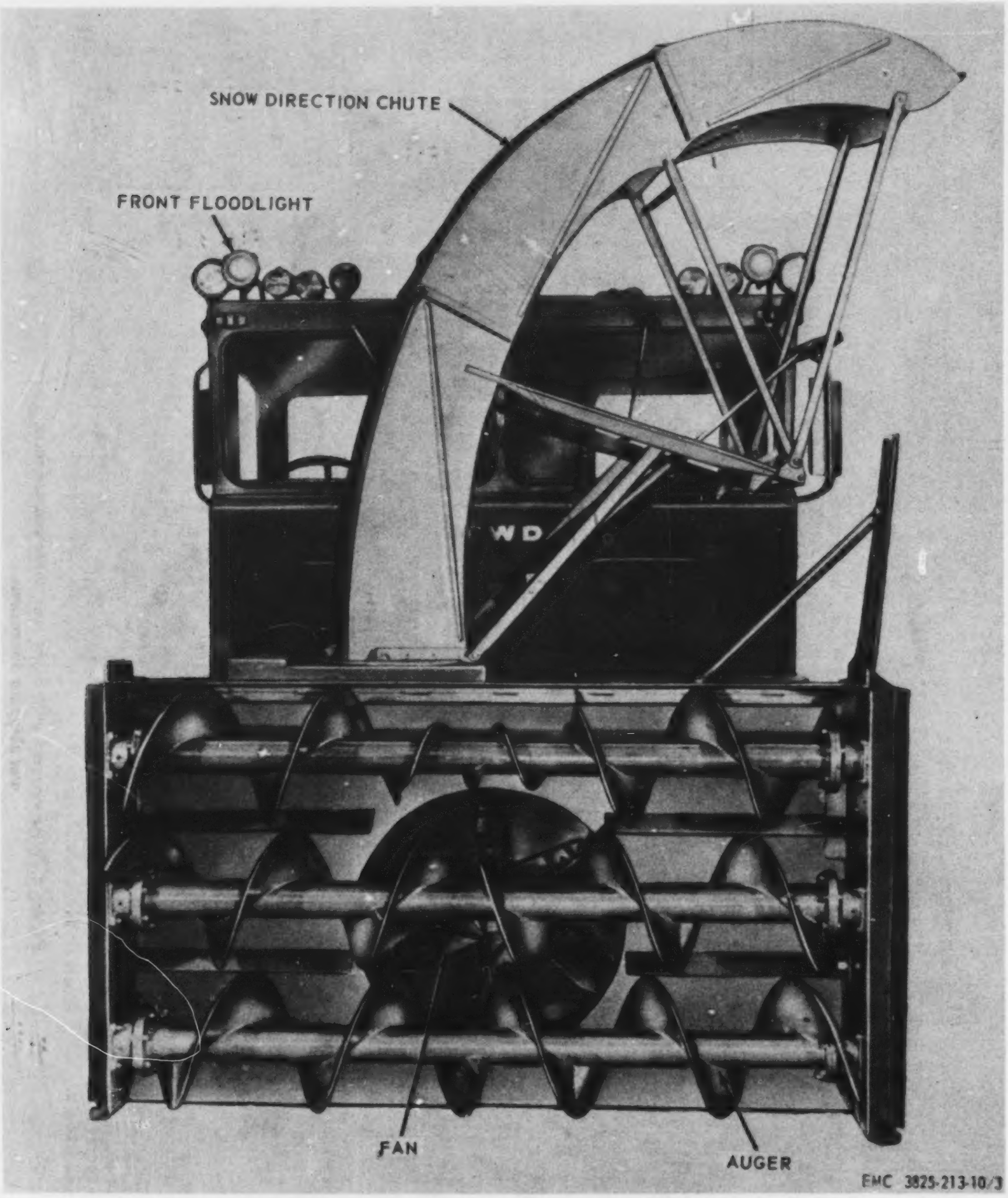

SNOW DIRECTION CHUTE
FRONT FLOODLIGHT
FAN
AUGER
EMC 3825-213-10/3

*Figure 3. Snow removal unit, front view.*

*c. Plow Power Engine.* The plow is powered by a Waukesha, Model TH 884, 8-cylinder, 4-cycle, overhead-valve type, liquid-cooled, gasoline engine. Power is transferred from the plow power unit through the transmission to the plow assembly drive shaft. The 24-volt engine ignition system consists of the wiring, distributor, spark plugs, and electrical starter.

*d. Carrier.* The carrier is the Four Wheel Drive Auto Co., Model 502300. It has three-speed transmission and a two-speed power transfer (auxiliary transmission), each manually shifted. The combination of the two transmissions provides six speeds forward and two in reverse. The power transfer assembly, mounted ahead of the transmission, supplies power to the front and rear wheels through propeller shaft. Both differentials are equipped with locks, which when engaged result in the same power to each wheel regardless of slippage at any wheel. Both front and rear wheels may be steered. The front wheels are steered mechanically with a hydraulic booster arrangement. The rear wheels are steered entirely by a hydraulic system. The brakes are entirely air-actuated. The carrier is equipped with two working floodlights, two adjustable spotlights, and two backup floodlights.

*e. Carrier Engine.* The carrier is powered by a Waukesha, Model TH 884, 8-cylinder, 4-cycle, overhead-valve type, liquid-cooled, gasoline engine. The engine has a down-draft carburetor and an electrically operated fuel pump. The electric starter is located on the left side of the engine. The dipstick, oil cooler, and tachometer drive are located on the right side of the engine. The fan assembly, air compressor, and generator are belt-driven by power from the crankshaft pulley. The carrier engine has a 24-volt electrical system, using the four 12-volt batteries which are also used as a power source for the plow engine.

## 4. Identification and Tabulated Data

*a. Identification.* The snow removal unit has 11 major identification and instruction plates as illustrated in figure 4.

(1) *Corps of Engineers identification plate.* Located on the left side of the snowplow assembly and above the auger drive chain case.

(2) *Snowplow manufacturer's identification plate.* Located on left-rear side of the snowplow assembly.

(3) *Truck loader manufacturer's identification plate.* Located on the left side of the snow direction chute base.

(4) *Carrier engine identification plate.* Located on the left side of the carrier engine, near the top of the flywheel housing.

(5) *Plow engine identification plate.* Located on the left side of the plow engine, near the top of the flywheel housing.

(6) *Rectifier malfunction warning plate.* Located on the right side of the carrier engine winterization enclosure.

(7) *Plow transmission shift instruction plate.* Located on the left side of the instrument panel, below the heater controls.

(8) *Heater systems instruction plate.* Located on the left side of the instrument panel, to the left of the heater controls.

(9) *Cab identification plate.* Located inside the operator's cab on the right-hand rear side near the ceiling.

(10) *Power transfer shift instruction plate.* Located to the left of the transmission shift selector box.

(11) *Carrier transmission shift instruction plate.* Located to the left of the carrier operator's seat on the transmission shift selector box.

*b. Tabulated Data.*

(1) *Carrier engine.*

| | |
|---|---|
| Manufacturer | Waukesha Motor Company |
| Model | TH 884 |
| Type | Industrial, V-Block, Military Standard, Gasoline |
| Horsepower | 330 at 2,600 rpm (revolutions per minute) |
| Cylinders | 8 |
| Bore | 5-3/8 in. (inch) (es) |

| | |
|---|---|
| Stroke | 4-7/8 in. |
| Cycle | 4 |
| Displacement | 884 cu. in. (cubic inch) (es) |
| Governed speed: | |
| No load | 2,850 rpm |
| Full load | 2,600 rpm |
| Low idle | 500 rpm |
| Maximum torque | 1,800 rpm 780 ft-lb (foot-pound) (s) |
| Compression ratio | 7.6:1 |
| Firing order | 1-8-7-3-6-5-4-2 |
| Fuel consumption rate | 36 gph (gallons per hour) |
| Batteries | 4 (12 volts each) (common power source with plow engine) |
| Electrical system | 24-volt |

(2) *Plow engine.*

| | |
|---|---|
| Manufacturer | Waukesha Motor Company |
| Model | TH 884 |
| Type | Industrial, V-Block, Military Standard, Gasoline |
| Horsepower | 330 at 2,600 rpm |
| Cylinders | 8 |
| Bore | 5-3/8 in |
| Stroke | 4-7/8 in. |
| Cycle | 4 |
| Displacement | 884 cu. in. |
| Governed speed: | |
| No load | 2,850 rph |
| Full load | 2,600 rpm |
| Low idle | 500 rpm |
| Maximum torque | At 1,800 rpm 780 ft-lb |
| Compression ratio | 7.6:1 |
| Firing order | 1-8-7-3-6-5-4-2 |
| Fuel consumption rate | 36 gph |
| Electrical system | 24-volt |

(3) *Carrier assembly.*

| | |
|---|---|
| Manufacturer | Four Wheel Drive Auto Co. |
| Model | 502300 |

(4) *Plow assembly.*

| | |
|---|---|
| Manufacturer | Klauser Manufacturing Co. |
| Model | TU3 |
| Serial number | 2581 |
| Capacity | 1,500 tons per hour |

(5) *Capacities.*

(*a*) *Carrier engine.*

| | |
|---|---|
| Fuel tank | 150 gal (gallon) (s) |
| Lubricating oil: | |
| Crankcase | 18 qt (quart) (s) |
| Oil filter assembly | 2 qt |
| Coolant | 104 qt |

(*b*) *Plow engine.*

| | |
|---|---|
| Fuel tank | 150 gal |
| Lubricating oil: | |
| Crankcase | 18 qt |
| Oil filter assembly | 2 qt |
| Coolant | 60 qt |

(*c*) *Steering.*

| | |
|---|---|
| Gearcase | 1 qt |
| Power steering | 9 qt |

(*d*) *Transmission and torque converter.* 49 qt

(*e*) *Transfer case.* 5 1/2 qt

(*f*) *Differential.*

| | |
|---|---|
| Rear | 7 1/2 qt |
| Front | 7 1/2 qt |

(*g*) *Differential lock.* 3/4 qt

(*h*) *Plow.*

| | |
|---|---|
| Hydraulic reservoir | 34 qt |
| Plow transmission | 8 qt |
| Plow fan gearcase | 2 qt |
| Auger drive chain case | 1 qt |

(6) *Dimensions and weights.*

(*a*) *Carrier assembly.*

| | |
|---|---|
| Overall length* | 329 in. |
| Overall width (carrier) | 96 in. |
| Overall width with plow | 102 in. |
| Overall height | 128 in. |
| Shipping tonnage | 49.2 tons |
| Shipping weight* | 31,685 lb |
| Shipping cubage* | 2,322 cu ft (cubic foot) (feet) |

*Denotes total for carrier and plow assemblies.

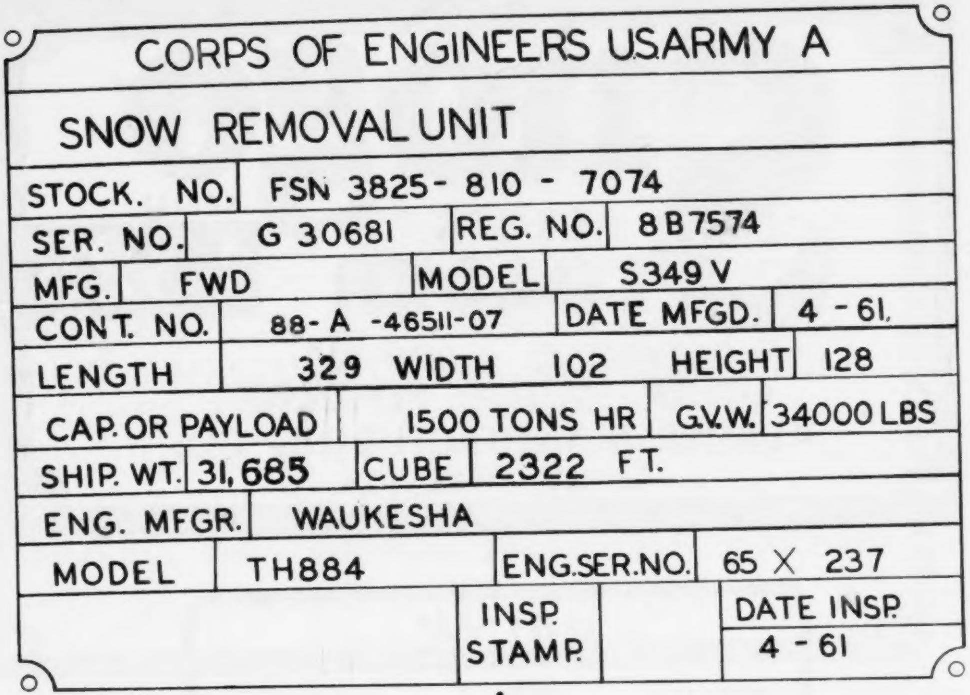
(*b*) *Plow assembly.*

| | |
|---|---|
| Overall width | 102 in. |
| Overall length | 52 in. |
| Overall height (plow down chute lowered) | 115 in. |
| Shipping tonnage | 2.17 |

(7) *Maintenance and operating supplies.* The supplies necessary for maintaining and operating the snow removal unit are listed in table I.

## 5. Difference in Models

This manual covers only the FWD Model S-349-V Snow Removal Unit. No known unit differences exist for the model covered by this manual.



CORPS OF ENGINEERS U.S.ARMY A

SNOW REMOVAL UNIT

STOCK. NO. FSN 3825- 810 - 7074

SER. NO. G 30681 REG. NO. 8 B 7574

MFG. FWD MODEL S349 V

CONT. NO. 88- A -46511-07 DATE MFGD. 4 - 61.

LENGTH 329 WIDTH 102 HEIGHT 128

CAP. OR PAYLOAD 1500 TONS HR G.V.W. 34000 LBS

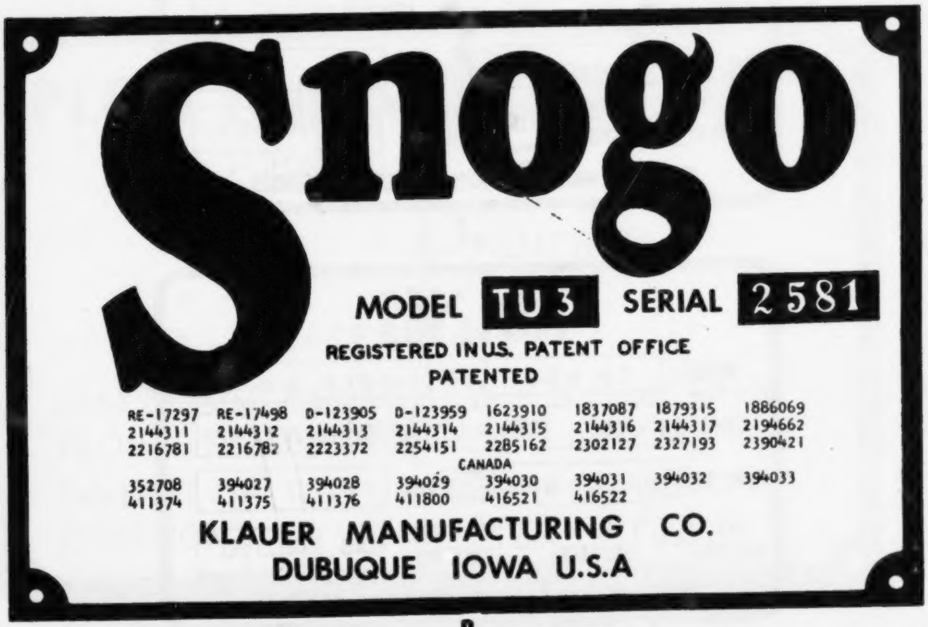
SHIP. WT. 31,685 CUBE 2322 FT.

ENG. MFGR. WAUKESHA

MODEL TH884 ENG.SER.NO. 65 X 237

INSP. STAMP. DATE INSP. 4 - 61

A



Snogo

MODEL TU 3 SERIAL 2581

REGISTERED IN U.S. PATENT OFFICE

PATENTED

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| RE-17297 | RE-17498 | D-123905 | D-123959 | 1623910 | 1837087 | 1879315 | 1886069 |
| 2144311 | 2144312 | 2144313 | 2144314 | 2144315 | 2144316 | 2144317 | 2194662 |
| 2216781 | 2216782 | 2223372 | 2254151 | 2285162 | 2302127 | 2327193 | 2390421 |

CANADA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 352708 | 394027 | 394028 | 394029 | 394030 | 394031 | 394032 | 394033 |
| 411374 | 411375 | 411376 | 411800 | 416521 | 416522 | | |

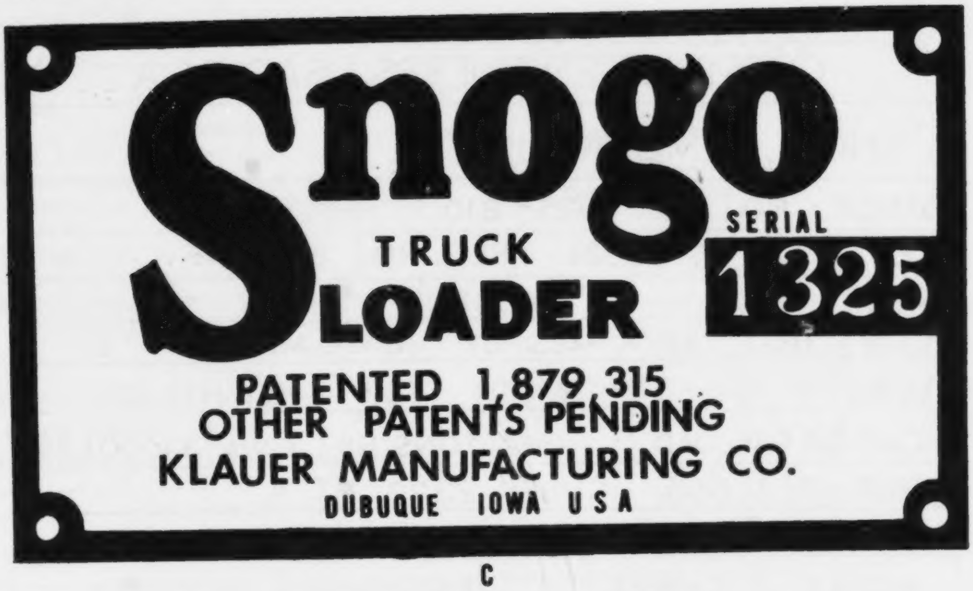
KLAUER MANUFACTURING CO.
DUBUQUE IOWA U.S.A

B

EMC 3825-213-10/4 ①

A. Corps of Engineers identification plate B. Snowplow manufacturer's identification plate

*Figure 4. Identification and instruction plates.*



Snogo

TRUCK

LOADER

SERIAL

1325

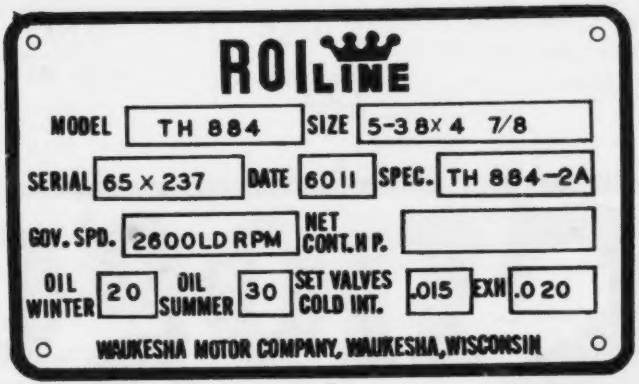
PATENTED 1,879,315

OTHER PATENTS PENDING

KLAUER MANUFACTURING CO.

DUBUQUE IOWA USA

C



ROI LINE

MODEL TH 884 SIZE 5-3 8 x 4 7/8

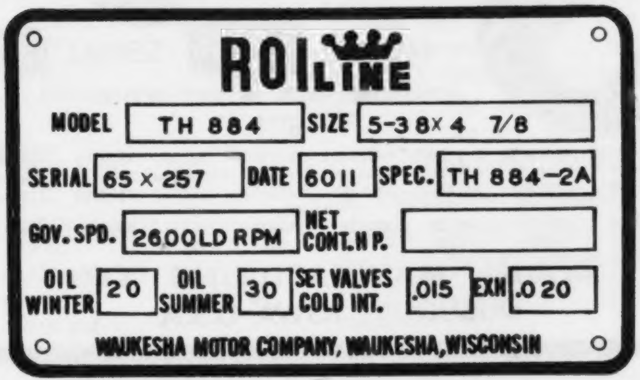
SERIAL 65 x 237 DATE 6011 SPEC. TH 884-2A

GOV. SPD. 2600LD RPM NET CONT. H P.

OIL WINTER 20 OIL SUMMER 30 SET VALVES COLD INT. .015 EXH .020

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

D



ROI LINE

MODEL TH 884 SIZE 5-3 8 x 4 7/8

SERIAL 65 x 257 DATE 6011 SPEC. TH 884-2A

GOV. SPD. 2600LD RPM NET CONT. H P.

OIL WINTER 20 OIL SUMMER 30 SET VALVES COLD INT. .015 EXH .020

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

E

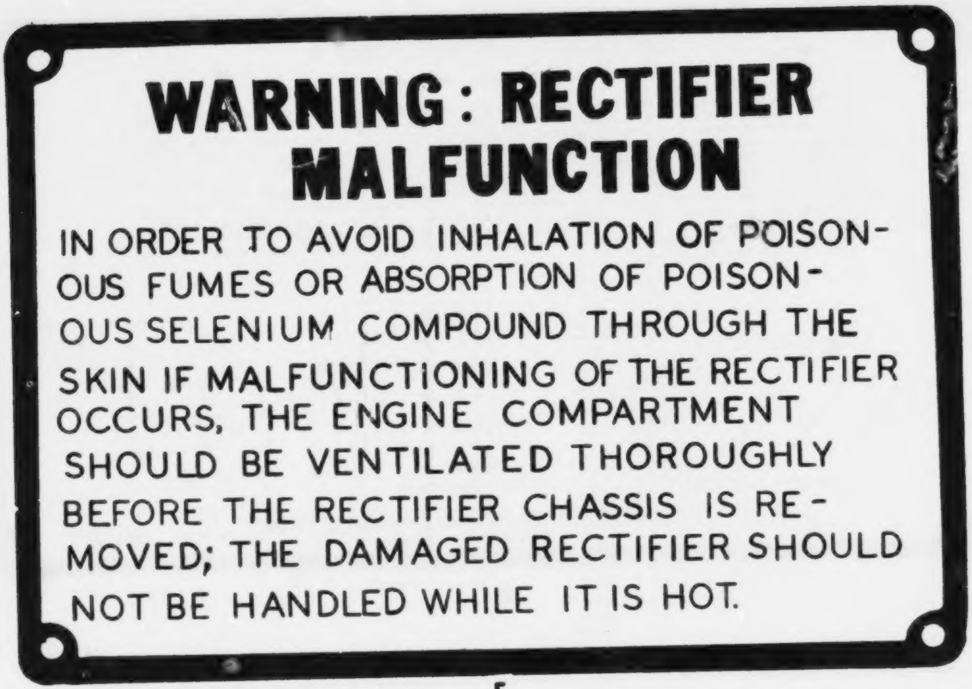
EMC 3825-213-10/4 ②

C. Truck loader manufacturer's identification plate

D. Carrier engine identification plate

E. Plow engine identification plate

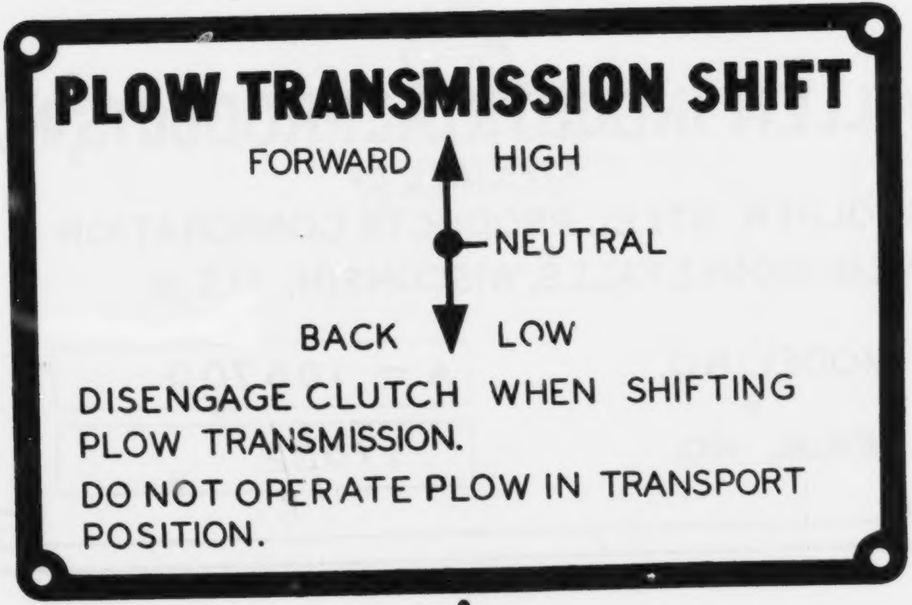
*Figure 4*—Continued.



WARNING: RECTIFIER MALFUNCTION

IN ORDER TO AVOID INHALATION OF POISONOUS FUMES OR ABSORPTION OF POISONOUS SELENIUM COMPOUND THROUGH THE SKIN IF MALFUNCTIONING OF THE RECTIFIER OCCURS, THE ENGINE COMPARTMENT SHOULD BE VENTILATED THOROUGHLY BEFORE THE RECTIFIER CHASSIS IS REMOVED; THE DAMAGED RECTIFIER SHOULD NOT BE HANDLED WHILE IT IS HOT.

F



PLOW TRANSMISSION SHIFT

FORWARD ▲ HIGH
NEUTRAL
BACK ▼ LOW

DISENGAGE CLUTCH WHEN SHIFTING PLOW TRANSMISSION.

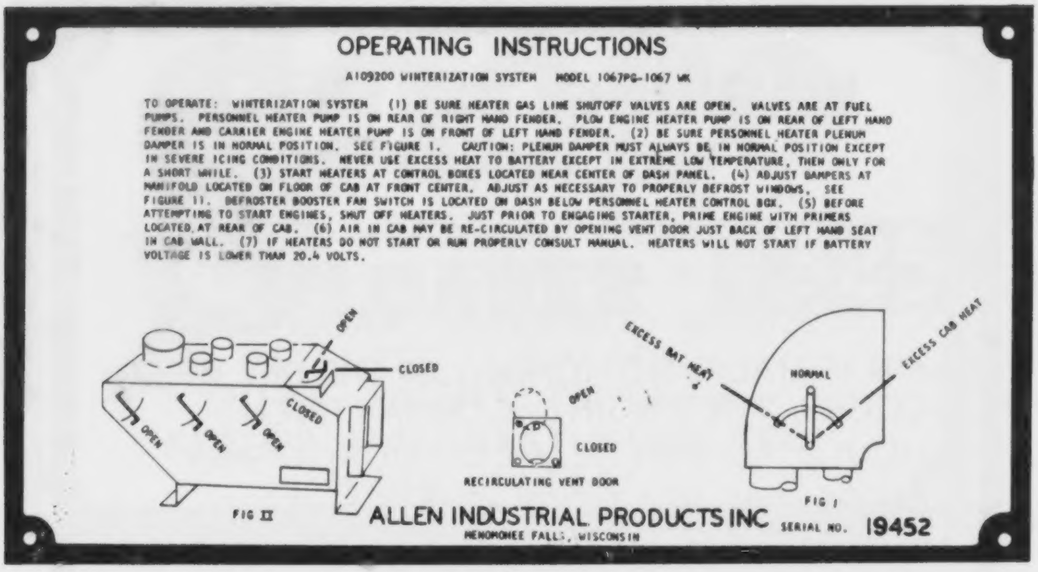
DO NOT OPERATE PLOW IN TRANSPORT POSITION.

G

EMC 3825-213-10/4 ③

F. Rectifier malfunction warning plate G. Plow transmission shift instruction plate

*Figure 4*—Continued.



OPERATING INSTRUCTIONS

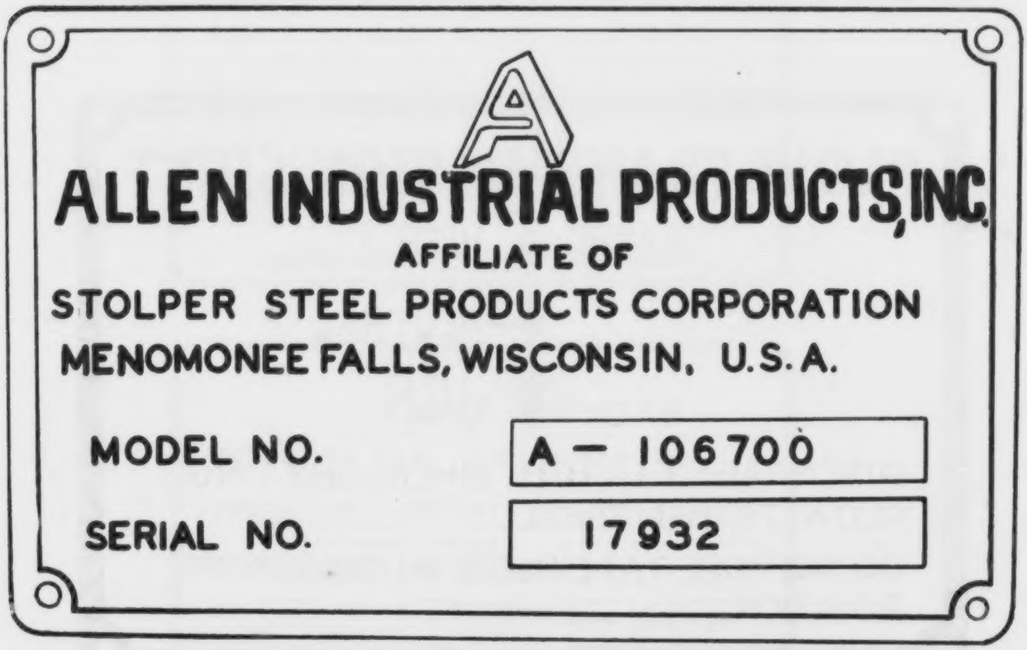
A109200 WINTERIZATION SYSTEM MODEL 1067PG-1067 WK

TO OPERATE: WINTERIZATION SYSTEM (1) BE SURE HEATER GAS LINE SHUTOFF VALVES ARE OPEN. VALVES ARE AT FUEL PUMPS. PERSONNEL HEATER PUMP IS ON REAR OF RIGHT HAND FENDER. PLOW ENGINE HEATER PUMP IS ON REAR OF LEFT HAND FENDER AND CARRIER ENGINE HEATER PUMP IS ON FRONT OF LEFT HAND FENDER. (2) BE SURE PERSONNEL HEATER PLENUM DAMPER IS IN NORMAL POSITION. SEE FIGURE I. CAUTION: PLENUM DAMPER MUST ALWAYS BE IN NORMAL POSITION EXCEPT IN SEVERE ICING CONDITIONS. NEVER USE EXCESS HEAT TO BATTERY EXCEPT IN EXTREME LOW TEMPERATURE, THEN ONLY FOR A SHORT WHILE. (3) START HEATERS AT CONTROL BOXES LOCATED NEAR CENTER OF DASH PANEL. (4) ADJUST DAMPERS AT MANIFOLD LOCATED ON FLOOR OF CAB AT FRONT CENTER. ADJUST AS NECESSARY TO PROPERLY DEFROST WINDOWS. SEE FIGURE II. DEFROSTER BOOSTER FAN SWITCH IS LOCATED ON DASH BELOW PERSONNEL HEATER CONTROL BOX. (5) BEFORE ATTEMPTING TO START ENGINES, SHUT OFF HEATERS. JUST PRIOR TO ENGAGING STARTER, PRIME ENGINE WITH PRIMERS LOCATED AT REAR OF CAB. (6) AIR IN CAB MAY BE RE-CIRCULATED BY OPENING VENT DOOR JUST BACK OF LEFT HAND SEAT IN CAB WALL. (7) IF HEATERS DO NOT START OR RUN PROPERLY CONSULT MANUAL. HEATERS WILL NOT START IF BATTERY VOLTAGE IS LOWER THAN 20.4 VOLTS.

ALLEN INDUSTRIAL PRODUCTS INC
MENOMONEE FALLS, WISCONSIN

SERIAL NO. 19452

H



ALLEN INDUSTRIAL PRODUCTS, INC.
AFFILIATE OF
STOLPER STEEL PRODUCTS CORPORATION
MENOMONEE FALLS, WISCONSIN, U.S.A.

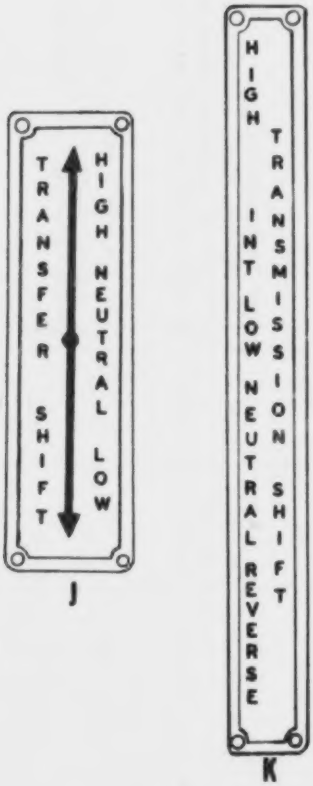
| | |
|---|---|
| MODEL NO. | A — 106700 |
| SERIAL NO. | 17932 |

I

EMC 3825-213-10/4 ④

H. Heater system instruction plate  I. Cab identification plate

*Figure 4*—Continued.


TRANSFER SHIFT
HIGH
NEUTRAL
LOW
J
HIGH
INT LOW
NEUTRAL
REVERSE
TRANSMISSION SHIFT
K

EMC 3825-213-10/4 ⑤

J. Power transfer shift instruction plate
K. Carrier transmission shift instruction plate

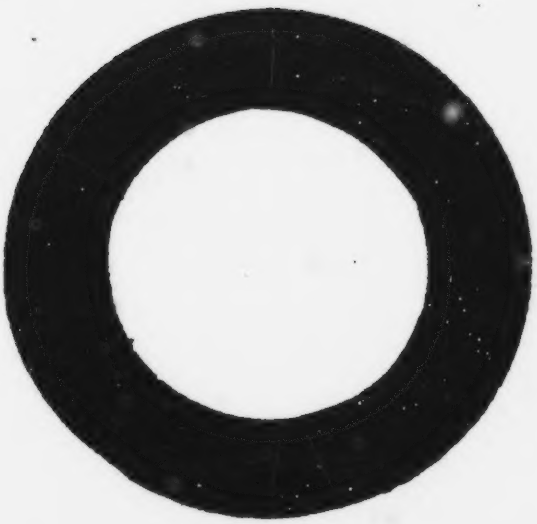
*Figure 4*—Continued.

*Table I. Maintenance and Operating Supplies*

| Item | Component application | Source of supply | Federal stock No. | Description | Quantity required for initial operation | Quantity required for 8 hours operation | Notes |
|---|---|---|---|---|---|---|---|
| 1. | 0101 CRANKCASE (1) (Carrier and Plow Engines). | | | OIL, LUBRICATING: 55-gal drums, as follows: | | | (1) Includes quantity of oil to fill engine oil system as follows:<br>18 qt—crankcase<br>2 qt—oil filter assembly |
| | | 10 | 9150-231-6655 | Grade 9250 or | 20 qt ea | (2) | |
| | | 10 | 9150-265-9436 | OE-30 | 20 qt ea | (2) | |
| | | 10 | 9150-231-9039 | Grade 9110 or | 20 qt ea | (2) | (2) See current LO for grade application and replenishment intervals. |
| | | 10 | 9150-265-9429 | OE-10 | 20 qt ea | (2) | |
| | | 10 | 9150-242-7604 | OES | 20 qt ea | (2) | |
| 2. | 0300 FUEL TANKS | -- | ------------- | GASOLINE, AUTOMOTIVE: bulk. | | | |
| | | 10 | 9130-160-1818 | 91 A | 150 gal ea (3) | (4) | (3) Tank capacity.<br>(4) Average fuel consumption is 72 gph of continuous operation for both carrier and plow engines. |
| 3. | 0500 RADIATOR, CARRIER ENGINE. | | | WATER | 104 qt | (5) | |
| | | 9 | 6850-243-1990 | ANTIFREEZE: inhibited glycol. | | | |
| | | 9 | 6850-174-1806 | ANTIFREEZE: compound arctic. | | | (5) See TM 5-3825-213-20 for quantities, ambient temperature, specific gravities and replenishment. |
| 4. | 0500 RADIATOR, PLOW ENGINE. | -- | ------------- | WATER (6) | 60 qt | (5) | |
| 5. | 0700 TORQUE CONVERTER AND TRANSMISSION. | -- | ------------- | OIL, LUBRICATING: (7) | | | (6) Use antifreeze as prescribed in item 3. |
| 6. | 0800 TRANSFER CASE. | -- | ------------- | OIL, LUBRICATING: (7) | 5-1/2 qt | (2) | (7) Use oil as prescribed in item 1. |
| 7. | 0800 PLOW TRANSMISSION. | -- | ------------- | OIL, LUBRICATING: (7) | 8 qt | (2) | (8) Use oil as prescribed in item 8. |
| 8. | 1102 DIFFERENTIAL FRONT AND REAR. | -- | ------------- | OIL, LUBRICATING: gear-55 gal drums, as follows: | | | (9) Use fluid as prescribed in item 11. |
| | | 10 | 9150-577-5848 | GO-90 | 7-1/2 qt ea. | (2) | |
| | | | | 15 gal drums, as follows: | | | |
| | | 10 | 9150-257-5441 | GOS | 7-1/2 qt | (2) | |

*Table I. Maintenance and Operating Supplies*—Continued

| Item | Component application | Source of supply | Federal stock No. | Description | Quantity required for initial operation | Quantity required for 8 hours operation | Notes |
|---|---|---|---|---|---|---|---|
| 9. | 1102 DIFFERENTIAL LOCK RESERVOIR. | -- | ---------------- | HYDRAULIC FLUID, NONPETROLEUM BASE:<br>1 gal can | | | |
| | | 10 | 9150-252-6375 | HBA ------- | 3/4 qt | (2) | |
| 10. | 1400 STEERING GEARCASE. | -- | ---------------- | OIL, LUBRICATING: gear. (8) | 1 qt | (2) | |
| 11. | 1413 POWER STEERING RESERVOIR. | -- | ---------------- | HYDRAULIC FLUID, PETROLEUM BASE:<br>55 gal drums, as follows: | | | |
| | | 10 | 9150-265-9408 | OHA -------- | 9 qt | (2) | |
| 12. | 4308 HYDRAULIC RESERVOIR PLOW. | -- | ---------------- | HYDRAULIC FLUID: (9) | 34 qt | (2) | |
| 13. | 7100 FAN GEARCASE | -- | ---------------- | OIL, LUBRICATING: gear. (8) | 2 qt | (2) | |
| 14. | 7100 AUGER DRIVE CHAIN CASE. | -- | ---------------- | OIL, LUBRICATING: gear (8) 5-gal drum, as follows: | | | |
| | | 10 | 9150-577-5841 | GO-80 ------ | 1 qt | (2) | |
| 15. | GREASE POINTS--- | -- | ---------------- | GREASE, AUTOMOTIVE AND ARTILLERY:<br>25-pound pail. | | | |
| | | 10 | 9150-190-0906 | GAA ------- | 6 lb | (2) | |



# CHAPTER 2
# INSTALLATION AND OPERATING INSTRUCTIONS

## Section I. SERVICE UPON RECEIPT OF EQUIPMENT

### 6. Unloading Equipment

*a.* The operator will assist in unloading the snowplow if it is to be driven from a carrier down a ramp. The following operations must be performed and precautions observed by the operator before and during unloading.

*b.* Remove all blocking and tiedown cables from carrier and snowplow.

*c.* Remove preservatives and protective devices as necessary for driving snowplow from carrier.

*d.* Perform before-operation services (par. 40).

*e.* Start the engine (par. 16) and drive the snowplow down the unloading ramp.

*f.* The plow assembly will be removed from a highway carrier or flatcar with a suitable lifting device if a ramp is not available.

***Caution:*** **Make sure the ramp is properly constructed to support the weight of the snow removal unit before unloading.**

### 7. Inspecting and Servicing Equipment

*Note.* Make sure equipment is completely deprocessed before servicing. Make sure all preservatives have been removed from the crankcase, fuel tank, gearboxes, and like items.

*a.* Perform the before-operation services listed in paragraph 40.

*b.* Make a complete visual inspection to see that the required tools, repair parts, publications, accessories, and attachments are on or with the snow removal unit.

*c.* Visually inspect the entire snow removal unit for loss of parts or damage which may have occurred during loading, removal, or shipment.

*d.* Inspect all controls and instruments for damage or improper operation. Inspect the instruments and gages for broken glass or illegibility.

*e.* Make a complete visual inspection of the entire snow removal unit compressed air system. Inspect for leaks, broken lines, and unserviceable chambers and valves.

*f.* Report to organizational maintenance all deficiencies that are beyond the scope of the operator to correct.

***Caution:*** **Special care should be exercised in cleaning the lubrication points before lubrication. Paint and foreign material will cause damage to moving joints and bearings.**

### 8. Installation or Setting-up Instructions

*a.* Report to organizational maintenance, 2d echelon, to install the plow chute.

*b.* Start carrier engine (fig. 12).

*c.* Install snowplow as illustrated in figure 5.

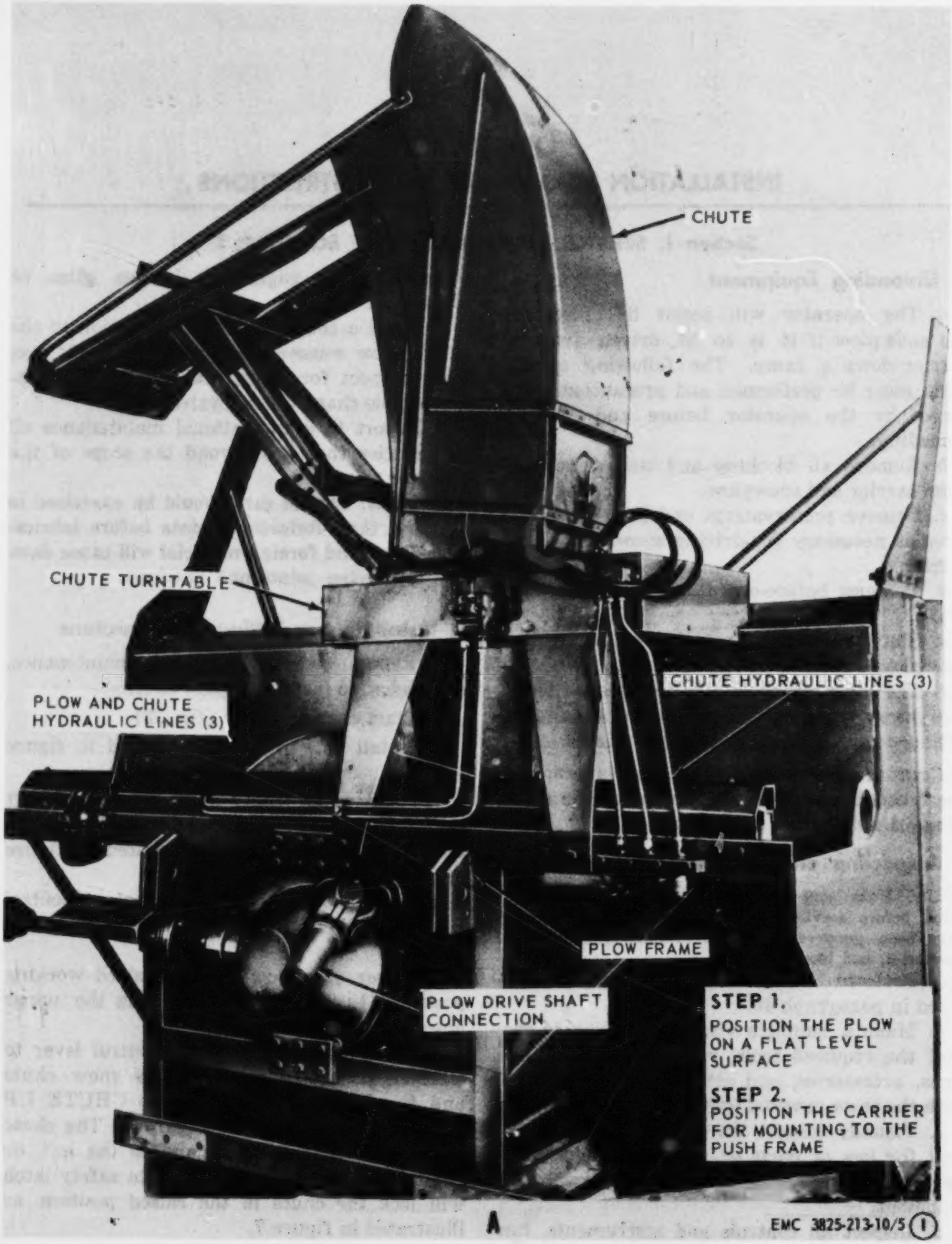
*d.* Remove the safety pins, right and left side, from the lower holes in the plow carrier track and guide rails as illustrated in figure 5.

*e.* Move snow removal plow height control lever to DOWN position as illustrated in figure 6.

*f.* Lower snowplow to the desired working position. Install the safety pins in the upper holes of carrier track.

*g.* Move the selector valve control lever to CHUTE position and move the snow chute and fan blower control lever to CHUTE UP position as illustrated in figure 6. The chute extension will extend up and to the left or right side of the unit. The chute safety latch will lock the chute in the raised position as illustrated in figure 7.

*h.* Stop carrier engine (fig. 13).

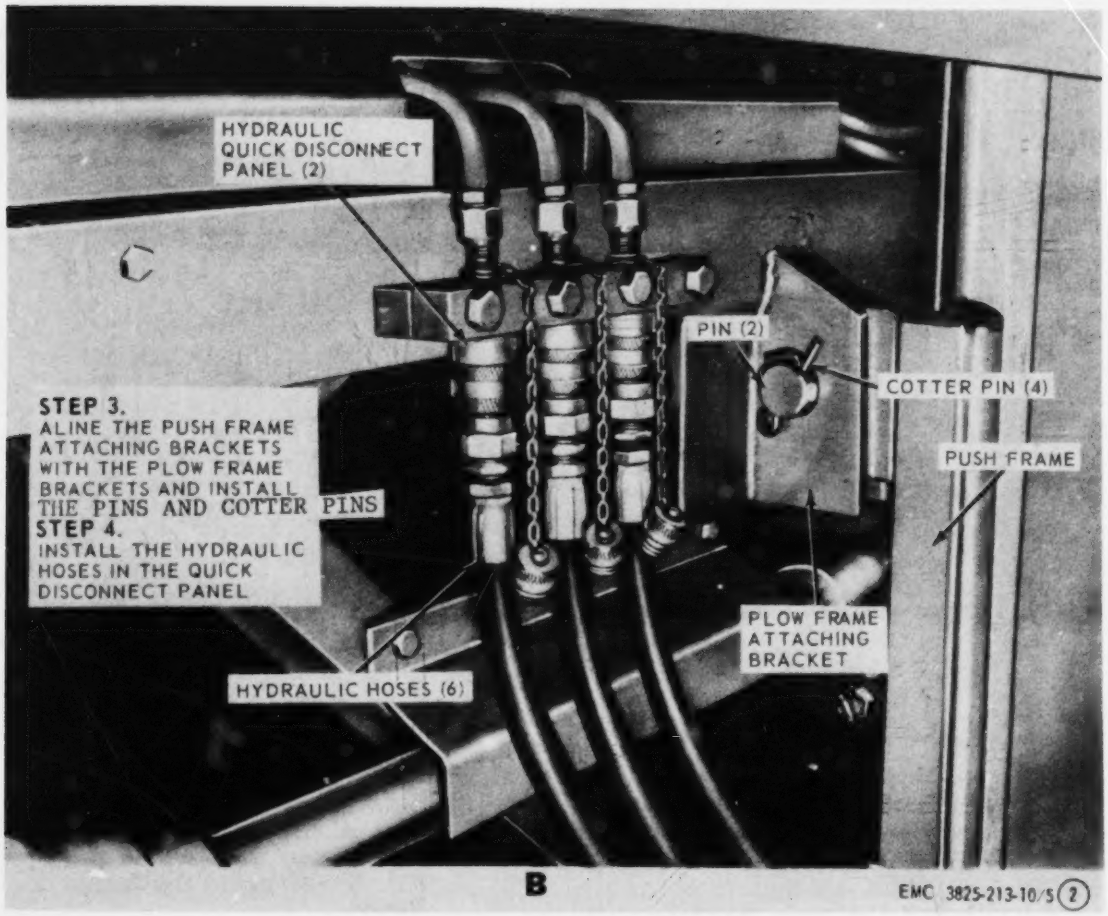

CHUTE
CHUTE TURNTABLE
PLOW AND CHUTE HYDRAULIC LINES (3)
CHUTE HYDRAULIC LINES (3)
PLOW FRAME
PLOW DRIVE SHAFT CONNECTION
A
EMC 3825-213-10/5 ①

**STEP 1.**
POSITION THE PLOW ON A FLAT LEVEL SURFACE

**STEP 2.**
POSITION THE CARRIER FOR MOUNTING TO THE PUSH FRAME

A. Plow positioned for installation

*Figure 5. Snowplow installation.*


HYDRAULIC QUICK DISCONNECT PANEL (2)
PIN (2)
COTTER PIN (4)
PUSH FRAME
STEP 3.
ALINE THE PUSH FRAME ATTACHING BRACKETS WITH THE PLOW FRAME BRACKETS AND INSTALL THE PINS AND COTTER PINS
STEP 4.
INSTALL THE HYDRAULIC HOSES IN THE QUICK DISCONNECT PANEL
PLOW FRAME ATTACHING BRACKET
HYDRAULIC HOSES (6)
B
EMC 3825-213-10/5 ②

B. Plow and hydraulic lines installation

*Figure 5*—Continued.

## 9. Equipment Conversion

*a. General.* This snow removal unit is designed to expel snow in two different ways. By using the snow direction chute in the banking or truck loading position, and the fan blower housing for spreading, the delivery of snow can be closely controlled.

*b. Conversion.*

(1) *Banking and truck loading positions.*

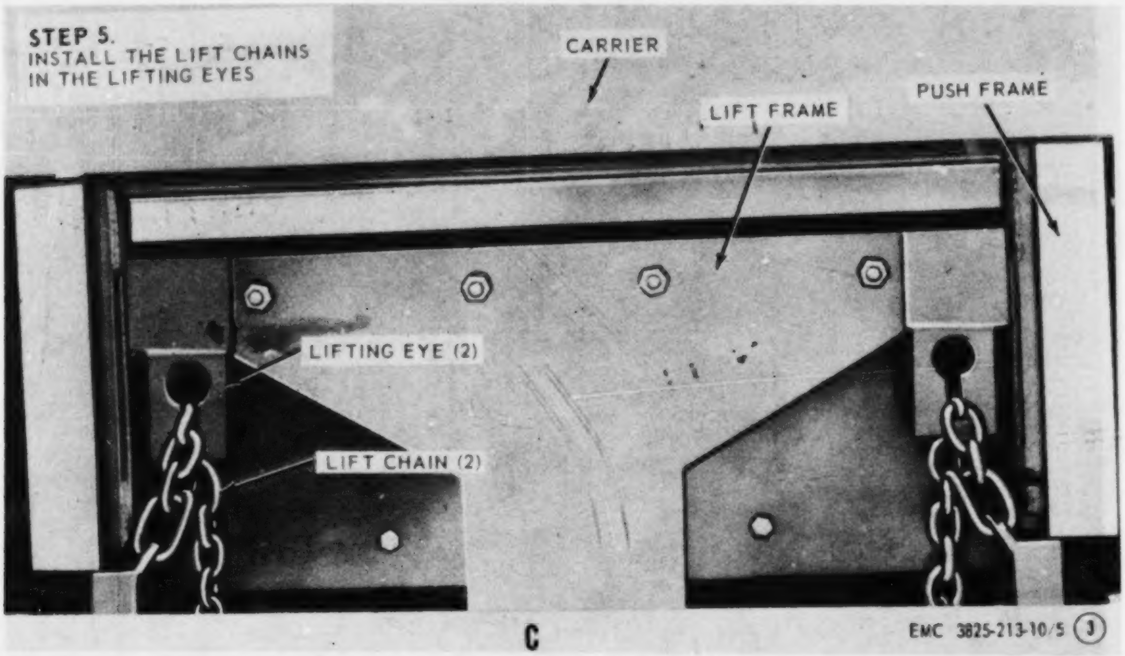
(*a*) Start carrier engine (fig. 12).

(*b*) Extend snow direction chute (fig. 6).

(*c*) Move selector valve control lever (fig. 6) to FAN BLOWER position and move snow chute and fan blower control lever as necessary to aline fan blower housing and snow direction chute as shown in figure 8.

**Caution:** ***Do not turn fan blower left of center with snow chute installed or damage will result.***

(*d*) To bank with snow direction chute down, release the safety latch (fig. 7) and with selector control valve



C. Lifting chain installation

*Figure 5*—Continued.

lever (fig. 6) in CHUTE position, move snow chute and fan blower control lever to CHUTE DOWN position.

(*e*) Control the snow direction chute rotation with the chute turn control lever as illustrated in figure 6.

(*f*) Stop carrier (fig. 17).

(2) *Spreading position.*

(*a*) Start carrier (fig. 16).

(*b*) Move selector valve control lever (fig. 6), to FAN BLOWER position and move snow chute and fan blower control lever as necessary to put fan blower housing in the desired spreading angle as illustrated in figure 9.

***Caution:*** **Before attempting to use the fan blower housing in spreading position remove the stop rod from the upper right-hand side of the fan blower housing.**

*Note.* If it is necessary to operate the snow removal unit with the fan blower housing in left side spreading position, report this condition to organizational maintenance.

(*c*) Stop carrier engine (fig. 13).

## 10. Movement to New Worksite

*a. Securing for Movement.*

(1) Start carrier engine (fig. 12).

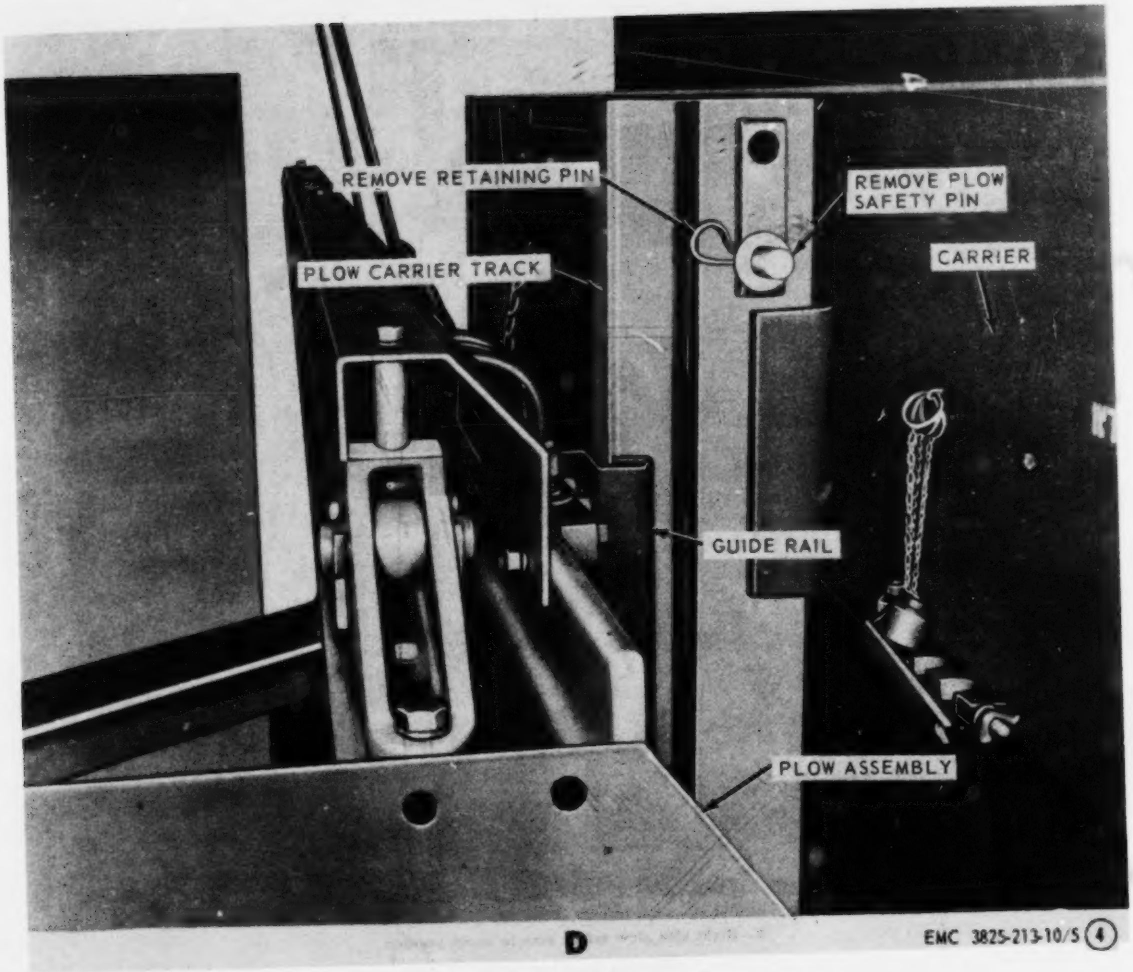
*Note.* Be sure plow clutch is disengaged and all motion of plow is stopped.

(2) Remove the plow safety pins (fig. 5).

(3) Raise plow assembly to its highest position (fig. 6).

(4) Install and secure the plow safety pins in the lower holes of the plow carrier track and guide rails (fig. 5).

***Caution:*** **Do not operate snowplow in the transport position.**

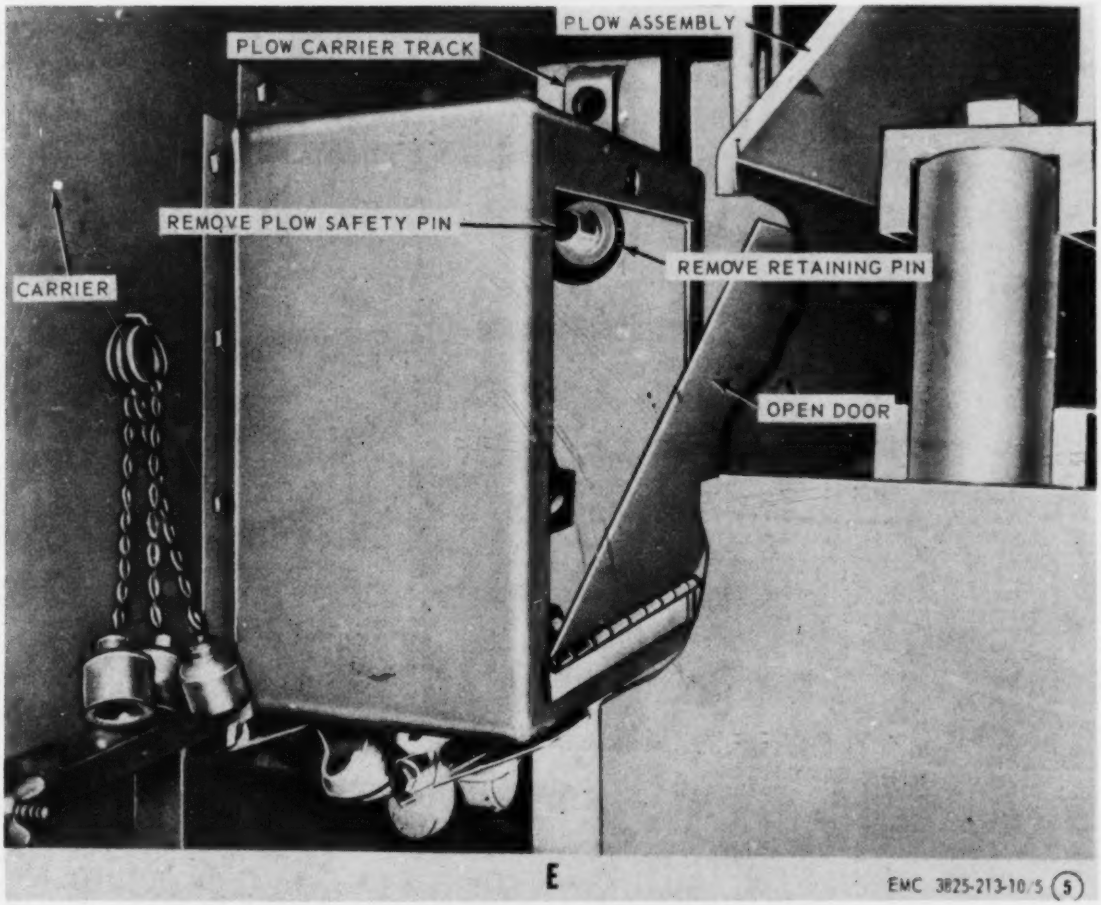

REMOVE RETAINING PIN
REMOVE PLOW SAFETY PIN
CARRIER
PLOW CARRIER TRACK
GUIDE RAIL
PLOW ASSEMBLY
D
EMC 3825-213-10/5 ④

D. Left side plow safety pins in carry position

*Figure 5*—Continued.

(5) See that all tools and equipment are properly stowed.

*b. Movement and Reinstallation.* Drive the truck to the new worksite and set up as instructed in paragraph 8.


PLOW ASSEMBLY
PLOW CARRIER TRACK
REMOVE PLOW SAFETY PIN
REMOVE RETAINING PIN
CARRIER
OPEN DOOR
E
EMC 3825-213-10/5 (5)

E. Right side plow safety pins in carry position

*Figure 5*—Continued.

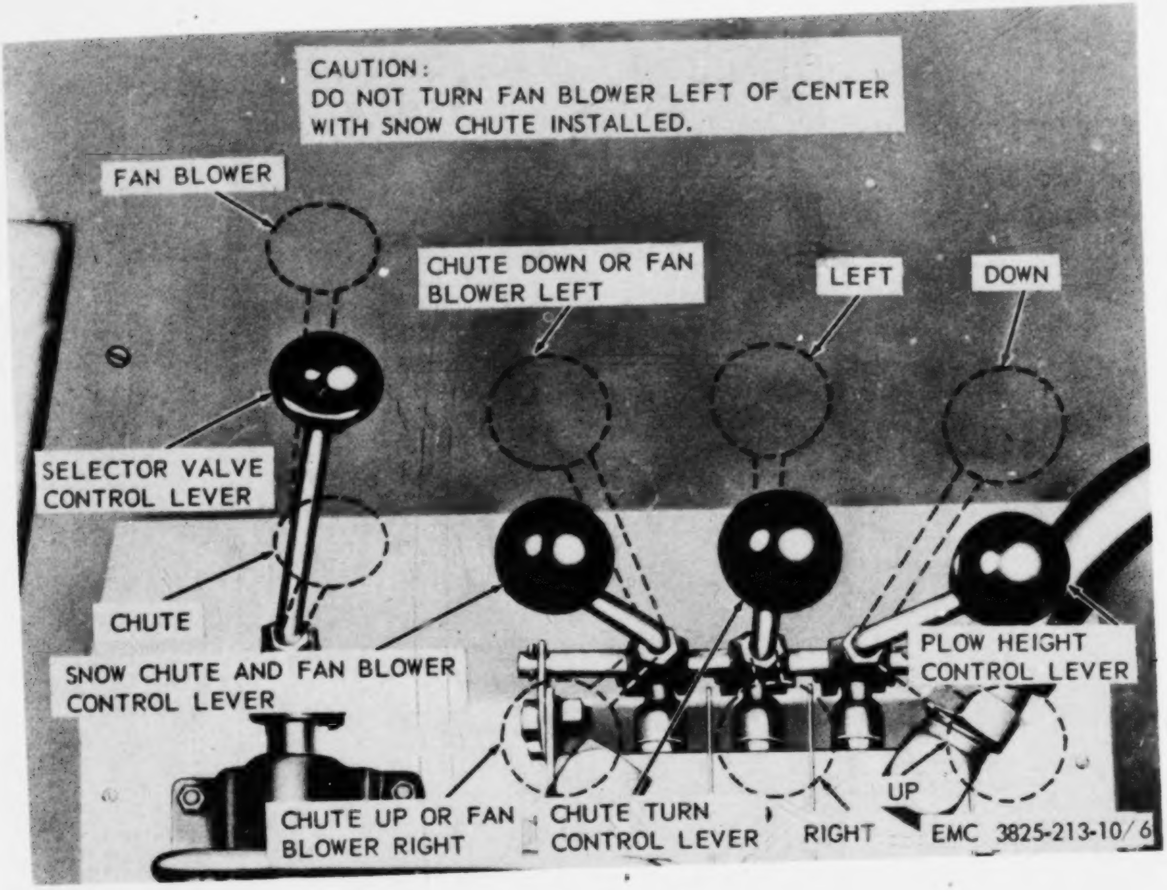

CAUTION:
DO NOT TURN FAN BLOWER LEFT OF CENTER WITH SNOW CHUTE INSTALLED.
FAN BLOWER
CHUTE DOWN OR FAN BLOWER LEFT
LEFT
DOWN
SELECTOR VALVE CONTROL LEVER
CHUTE
SNOW CHUTE AND FAN BLOWER CONTROL LEVER
PLOW HEIGHT CONTROL LEVER
UP
CHUTE UP OR FAN BLOWER RIGHT
CHUTE TURN CONTROL LEVER
RIGHT
EMC 3825-213-10/6

*Figure 6. Snowplow and chute control levers.*

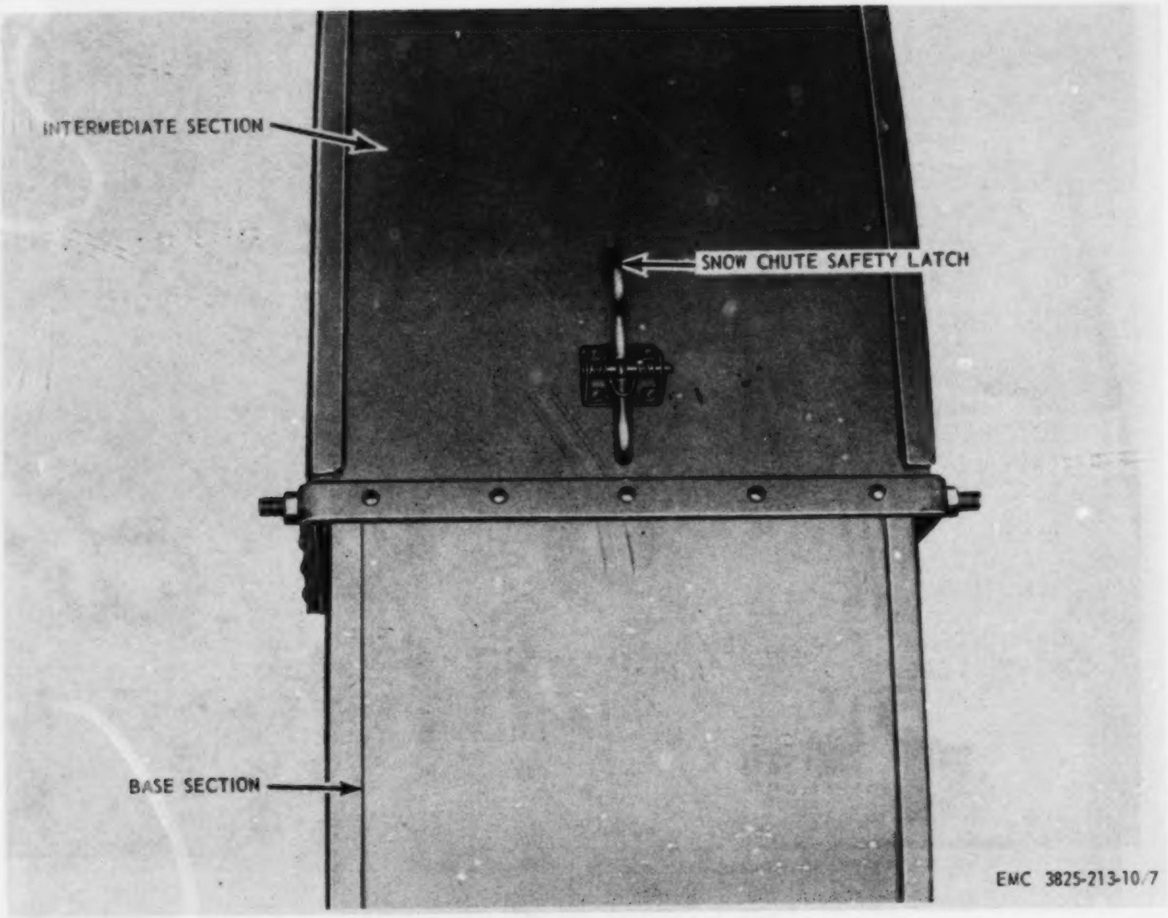
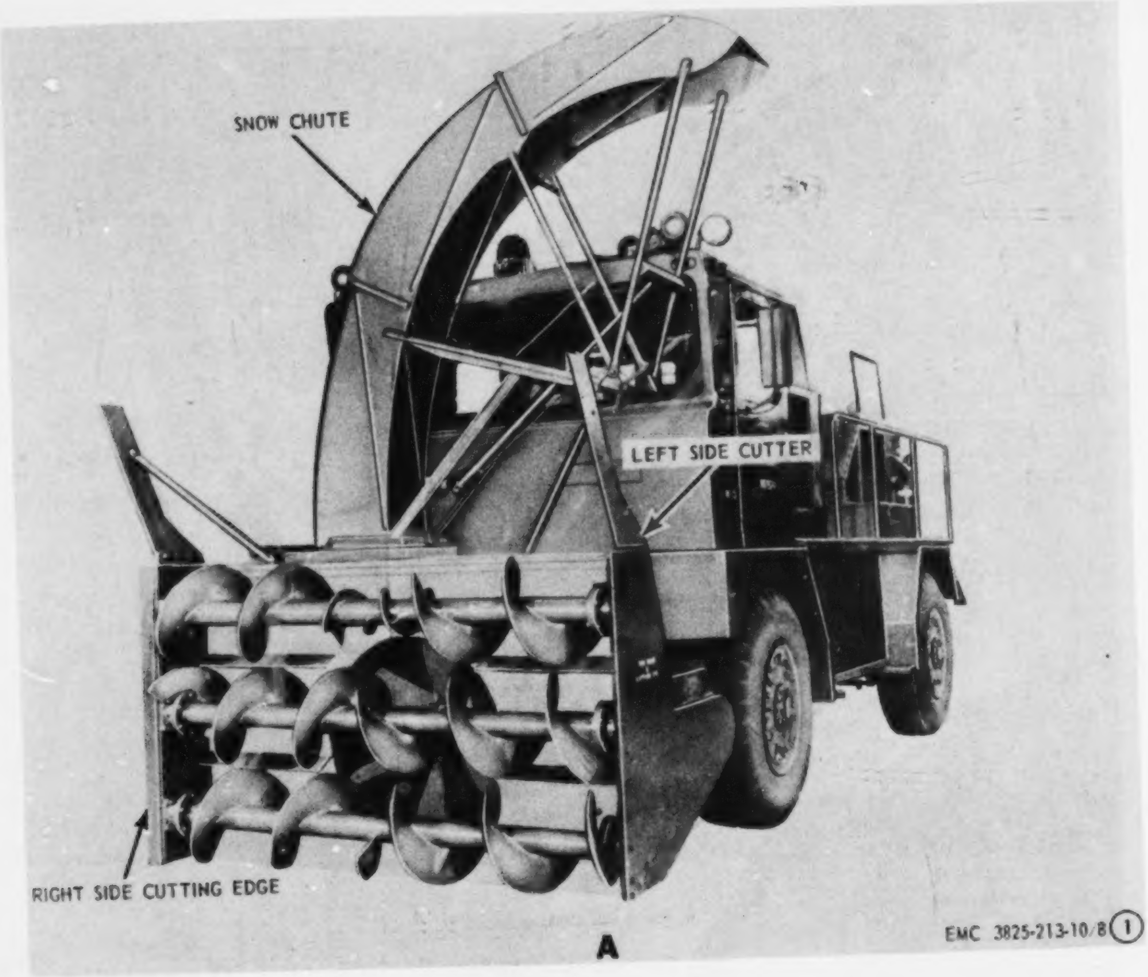
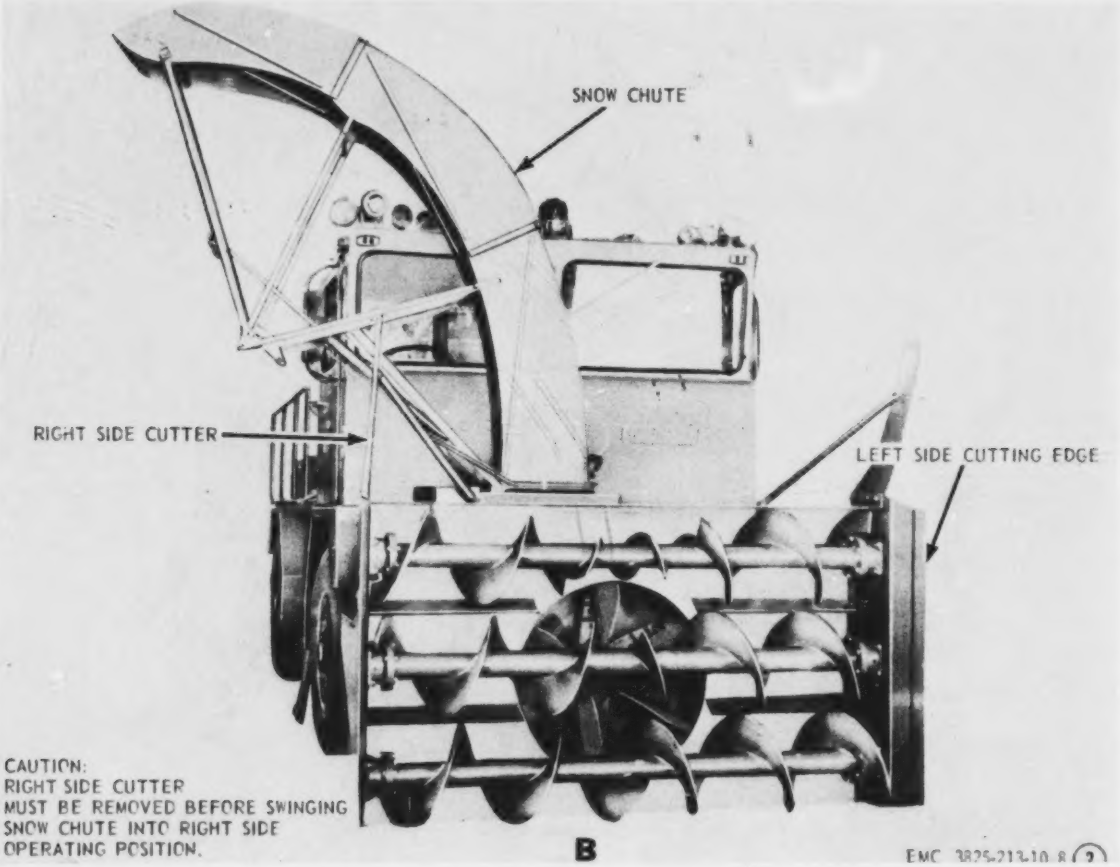

INTERMEDIATE SECTION
SNOW CHUTE SAFETY LATCH
BASE SECTION
EMC 3825-213-10/7

*Figure 7. Snow chute safety latch in locked position.*


SNOW CHUTE
LEFT SIDE CUTTER
RIGHT SIDE CUTTING EDGE
A
EMC 3825-213-10/8①

A. Left side banking position

*Figure 8. Snow chute, banking positions.*


SNOW CHUTE
RIGHT SIDE CUTTER
LEFT SIDE CUTTING EDGE
CAUTION:
RIGHT SIDE CUTTER
MUST BE REMOVED BEFORE SWINGING
SNOW CHUTE INTO RIGHT SIDE
OPERATING POSITION.
B
EMC 3825-213-10 8 ②

**B. Right side banking position**

*Figure 8*—Continued.

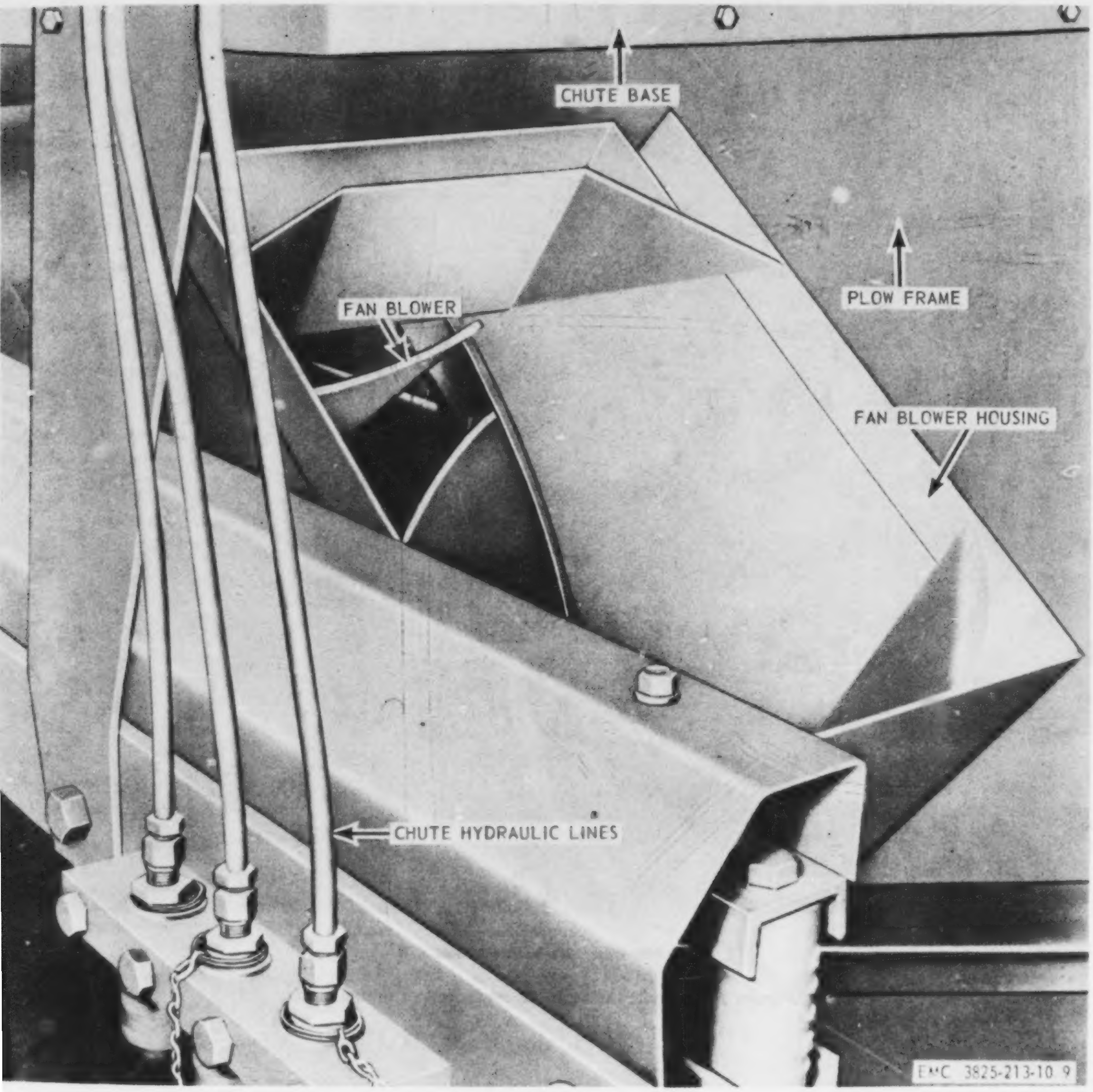

CHUTE BASE
PLOW FRAME
FAN BLOWER
FAN BLOWER HOUSING
CHUTE HYDRAULIC LINES
EMC 3825-213-10 9

*Figure 9. Fan blower housing, spread position.*

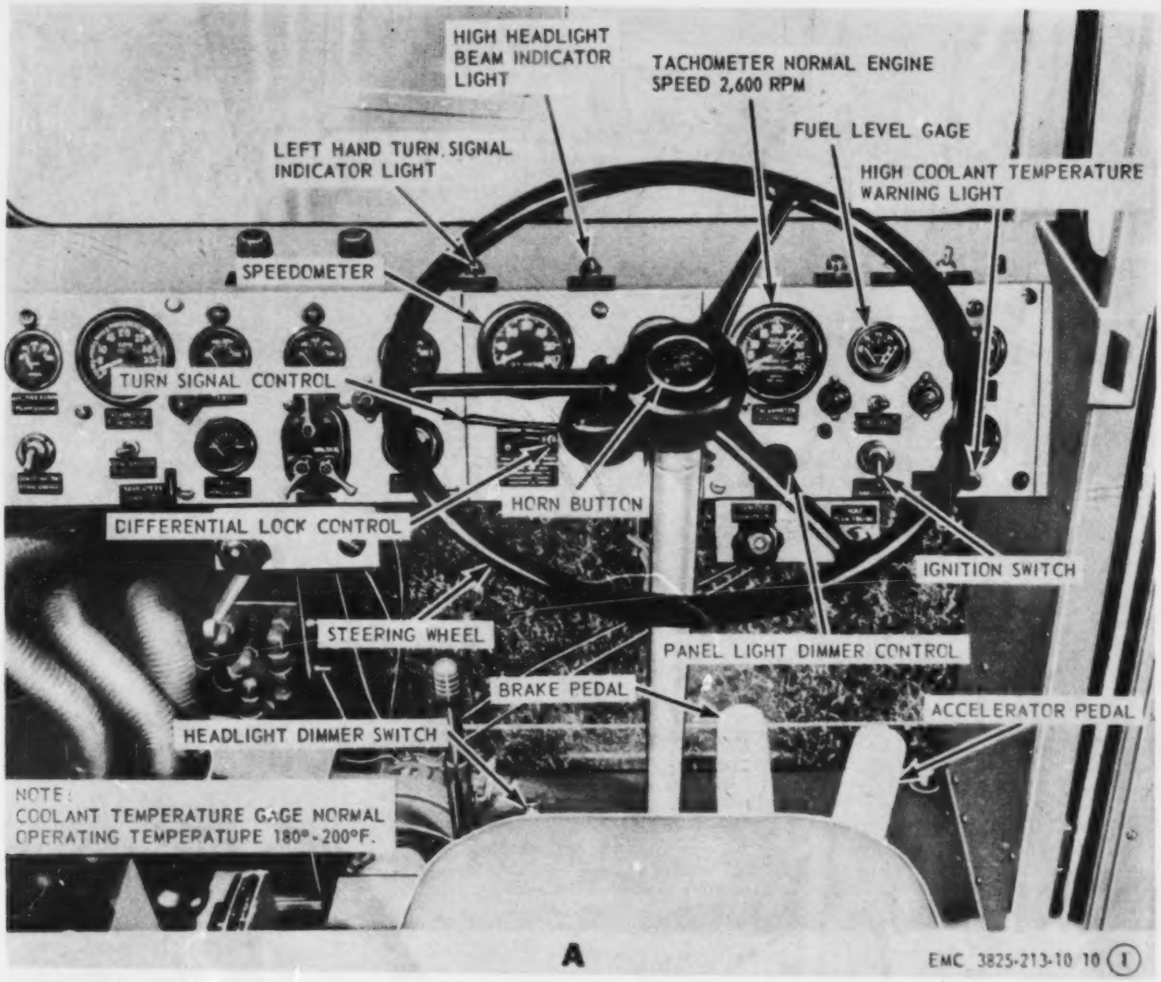
## Section II. CARRIER AND ENGINE CONTROLS AND INSTRUMENTS

### 11. General

This section describes, locates, illustrates, and furnishes the operator, crew, or driver, sufficient information about the various controls and instruments for proper operation of the carrier unit.

### 12. Controls and Instruments

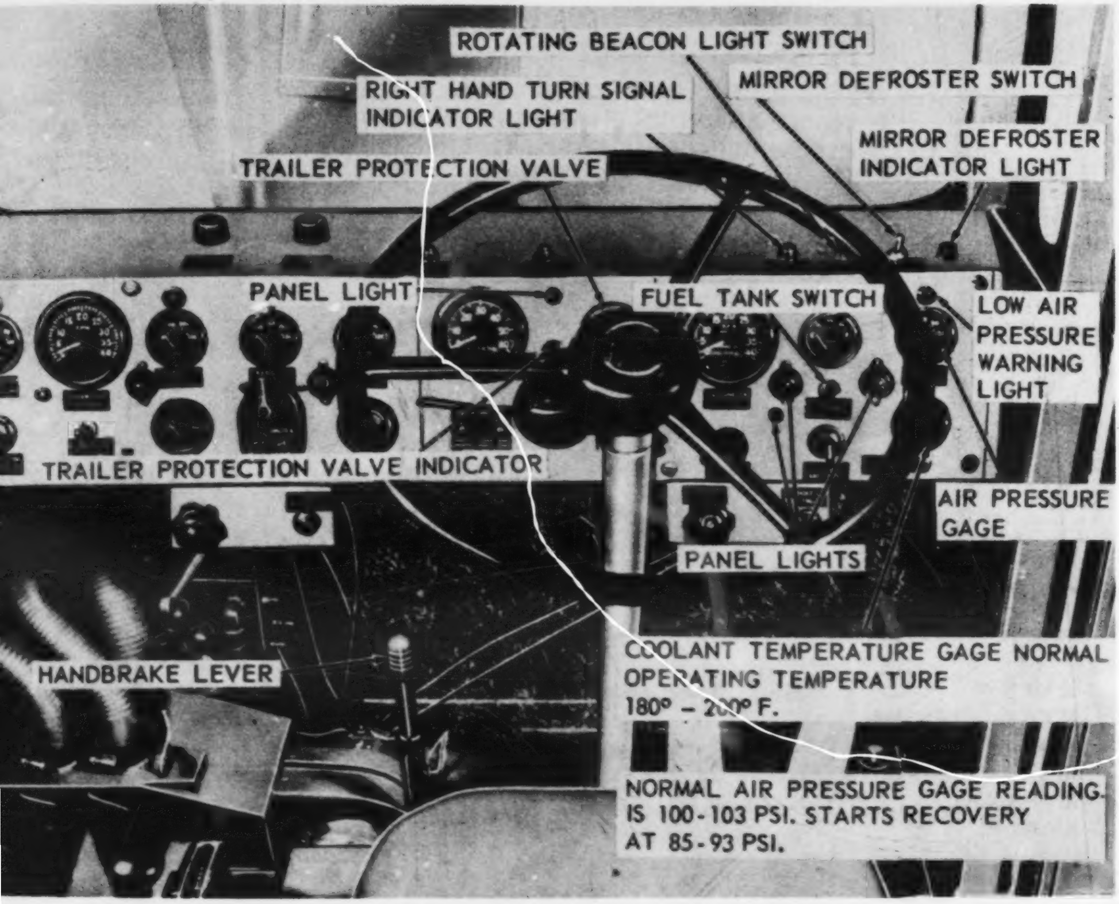
The purposes and use of the carrier unit controls and normal readings of the carrier unit instruments and gages are illustrated in figure 10.


HIGH HEADLIGHT BEAM INDICATOR LIGHT
TACHOMETER NORMAL ENGINE SPEED 2,600 RPM
FUEL LEVEL GAGE
LEFT HAND TURN SIGNAL INDICATOR LIGHT
HIGH COOLANT TEMPERATURE WARNING LIGHT
SPEEDOMETER
TURN SIGNAL CONTROL
HORN BUTTON
DIFFERENTIAL LOCK CONTROL
IGNITION SWITCH
STEERING WHEEL
PANEL LIGHT DIMMER CONTROL
BRAKE PEDAL
ACCELERATOR PEDAL
HEADLIGHT DIMMER SWITCH
A
EMC 3825-213-10 10 ①

NOTE:
COOLANT TEMPERATURE GAGE NORMAL OPERATING TEMPERATURE 180°-200°F.

**A. Operator's cab, right side**

*Figure 10. Carrier and engine controls and instruments.*

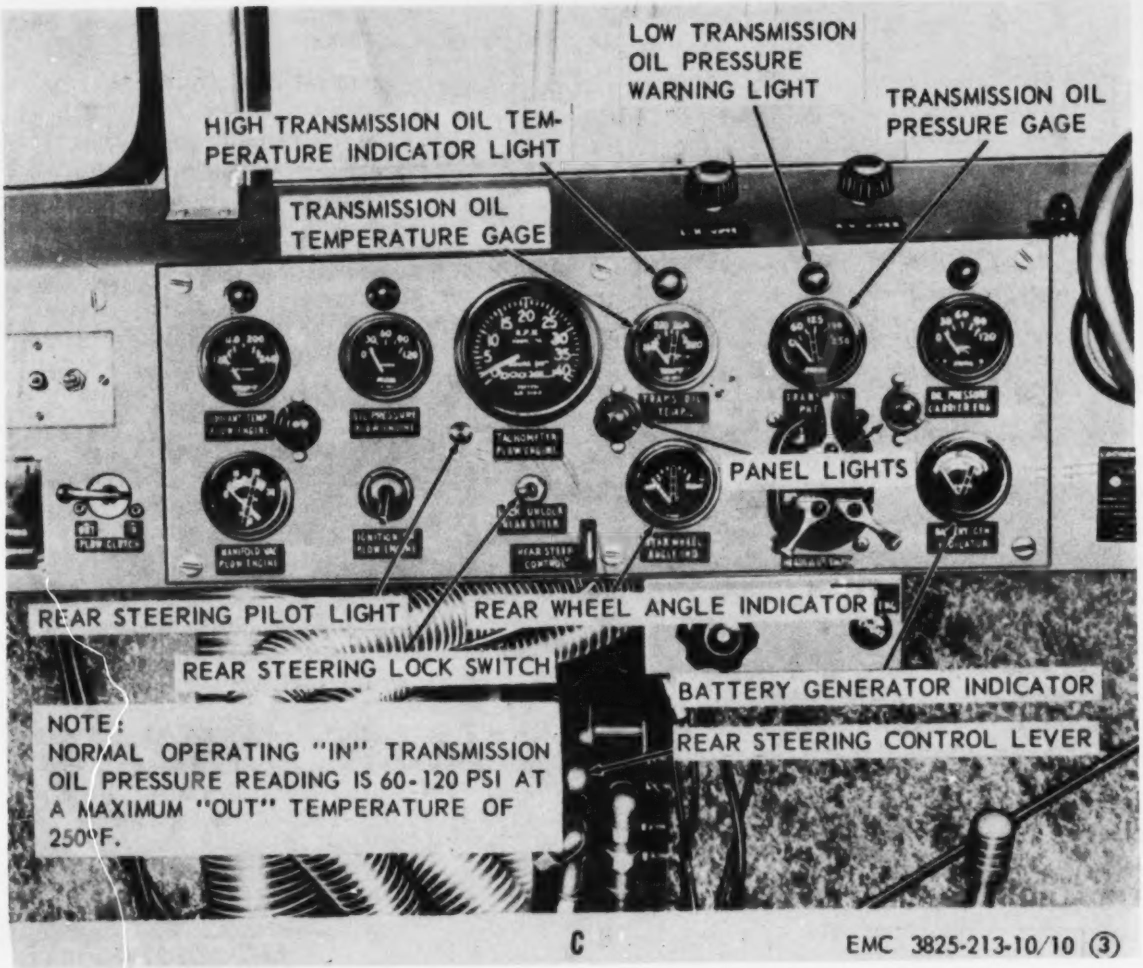

ROTATING BEACON LIGHT SWITCH
RIGHT HAND TURN SIGNAL INDICATOR LIGHT
MIRROR DEFROSTER SWITCH
MIRROR DEFROSTER INDICATOR LIGHT
TRAILER PROTECTION VALVE
PANEL LIGHT
FUEL TANK SWITCH
LOW AIR PRESSURE WARNING LIGHT
TRAILER PROTECTION VALVE INDICATOR
AIR PRESSURE GAGE
PANEL LIGHTS
HANDBRAKE LEVER
COOLANT TEMPERATURE GAGE NORMAL OPERATING TEMPERATURE 180° – 200° F.
NORMAL AIR PRESSURE GAGE READING IS 100-103 PSI. STARTS RECOVERY AT 85-93 PSI.

**B**

EMC 3825-213-10/10 ②

B. Operator's cab, right side—continued

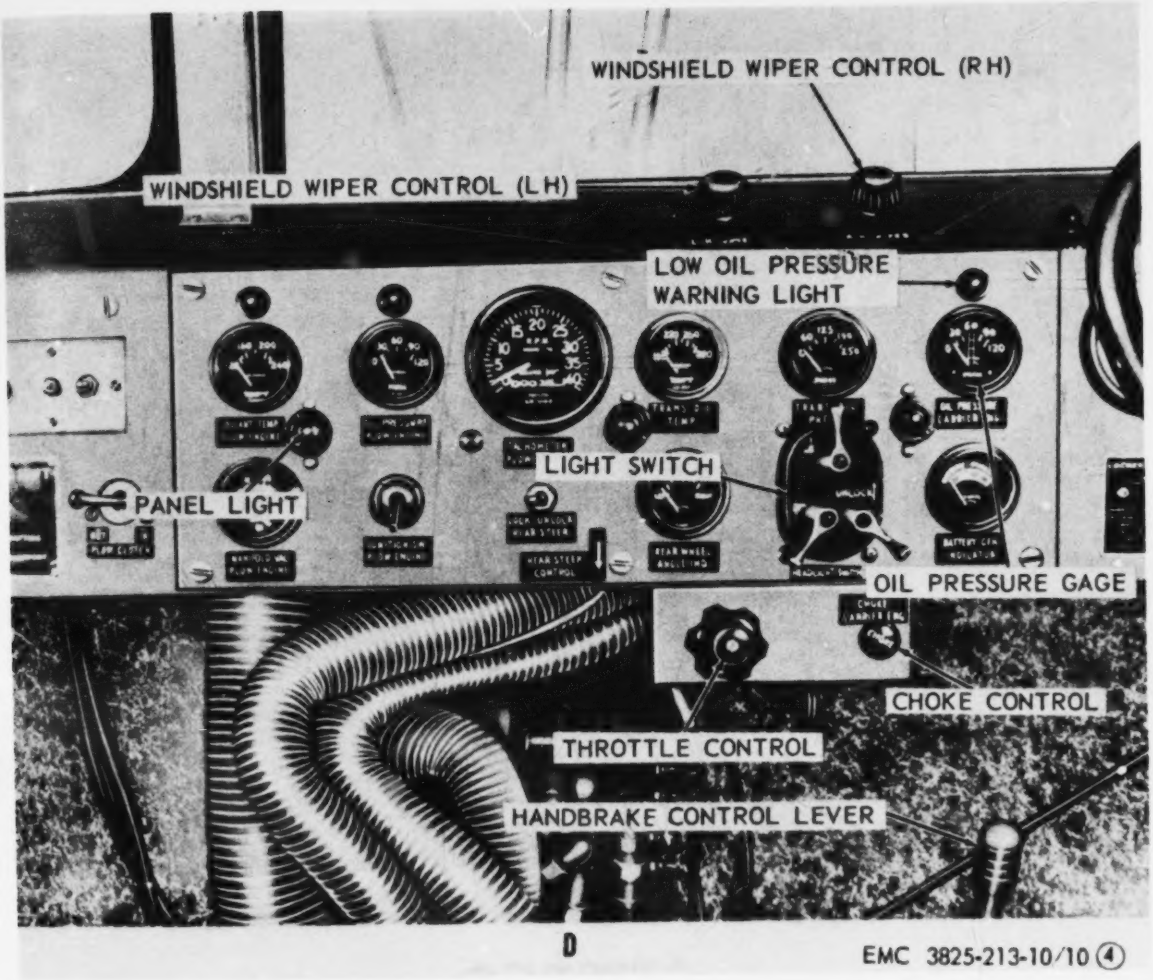
*Figure 10*—Continued.


LOW TRANSMISSION OIL PRESSURE WARNING LIGHT
TRANSMISSION OIL PRESSURE GAGE
HIGH TRANSMISSION OIL TEMPERATURE INDICATOR LIGHT
TRANSMISSION OIL TEMPERATURE GAGE
PANEL LIGHTS
REAR STEERING PILOT LIGHT
REAR WHEEL ANGLE INDICATOR
REAR STEERING LOCK SWITCH
BATTERY GENERATOR INDICATOR
REAR STEERING CONTROL LEVER
C
EMC 3825-213-10/10 ③

NOTE:
NORMAL OPERATING "IN" TRANSMISSION OIL PRESSURE READING IS 60-120 PSI AT A MAXIMUM "OUT" TEMPERATURE OF 250°F.

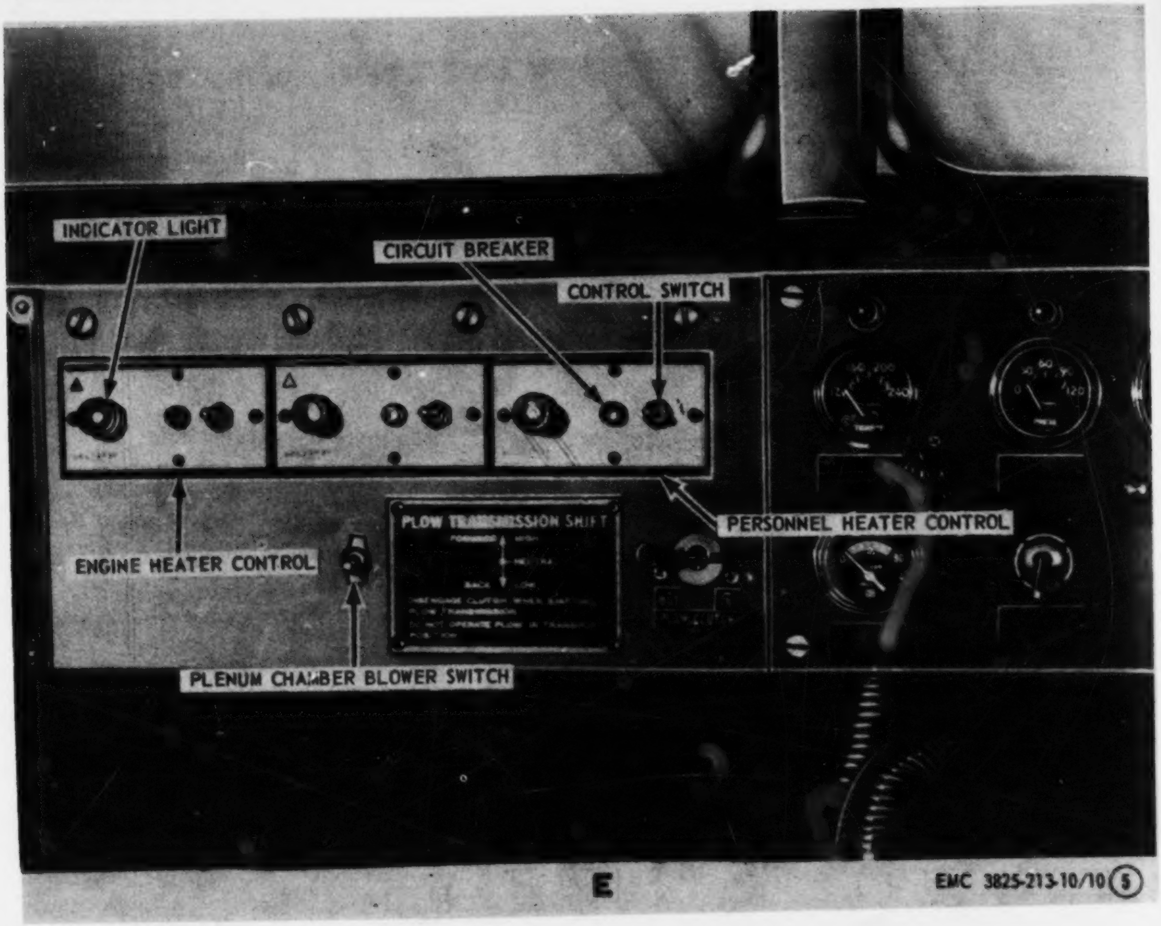
C. Operator's cab, center

*Figure 10*—Continued.


WINDSHIELD WIPER CONTROL (RH)
WINDSHIELD WIPER CONTROL (LH)
LOW OIL PRESSURE WARNING LIGHT
LIGHT SWITCH
PANEL LIGHT
OIL PRESSURE GAGE
CHOKE CONTROL
THROTTLE CONTROL
HANDBRAKE CONTROL LEVER
D
EMC 3825-213-10/10 ④

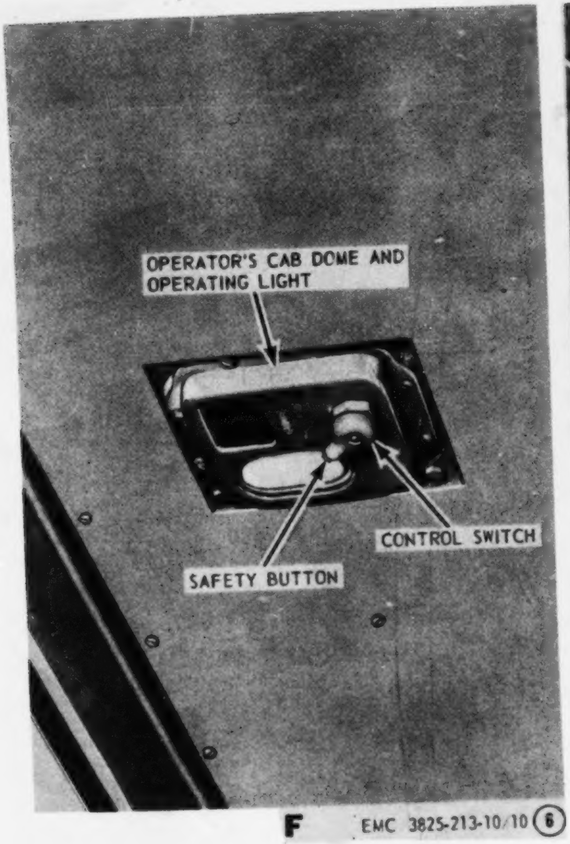
D. Operator's cab, center—continued

*Figure 10*—Continued.


INDICATOR LIGHT
CIRCUIT BREAKER
CONTROL SWITCH
PERSONNEL HEATER CONTROL
ENGINE HEATER CONTROL
PLOW TRANSMISSION SHIFT
PLENUM CHAMBER BLOWER SWITCH
E
EMC 3825-213-10/10 (5)

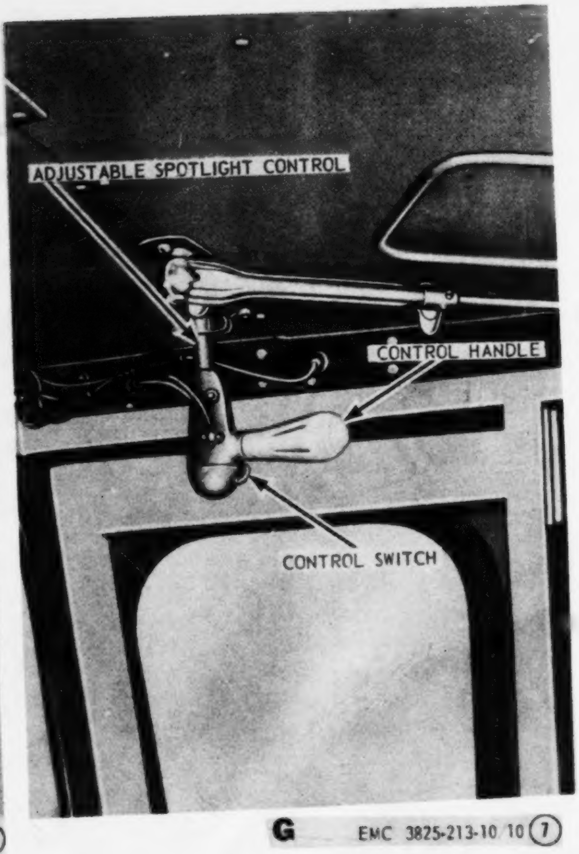
E. Operator's cab, left side

*Figure 10*—Continued.


OPERATOR'S CAB DOME AND OPERATING LIGHT
CONTROL SWITCH
SAFETY BUTTON
F
EMC 3825-213-10/10 ⑥

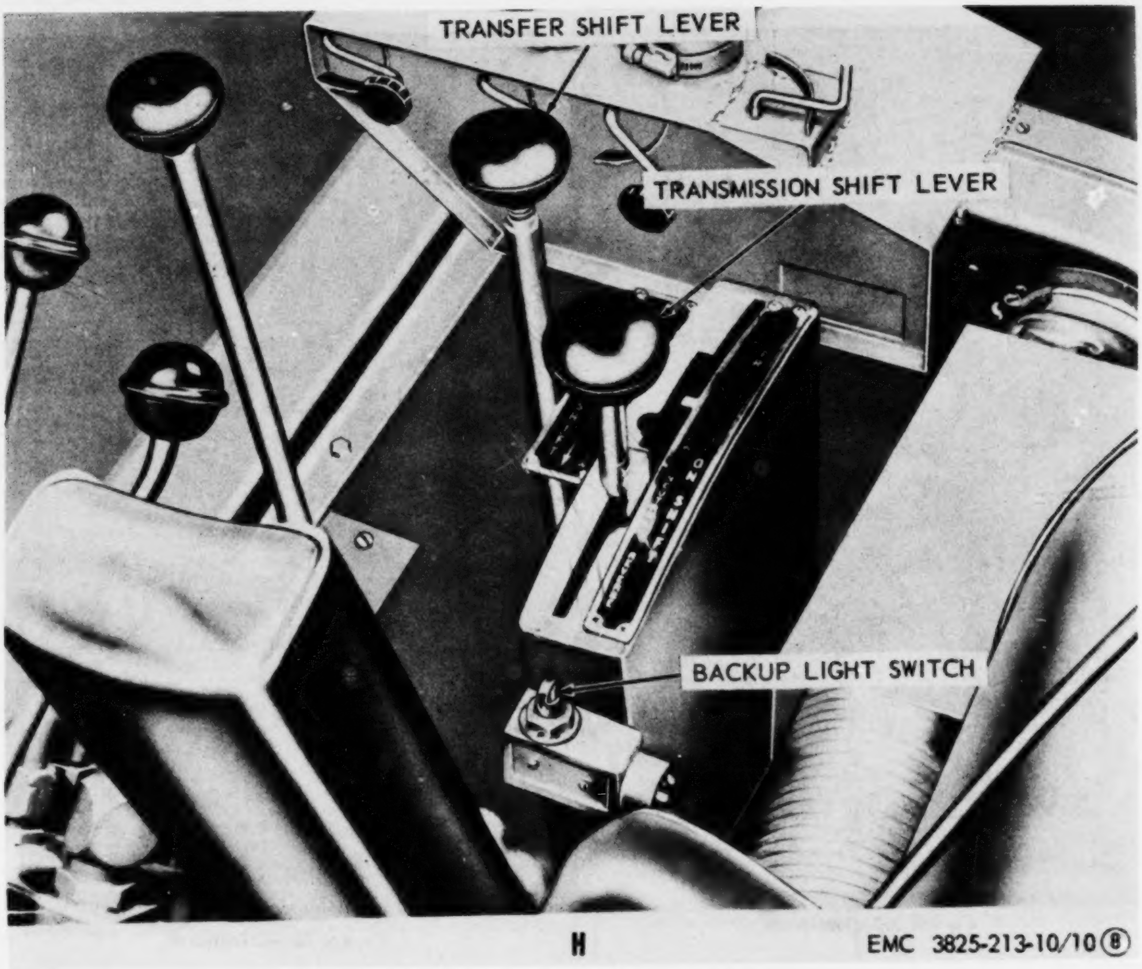
F. Operator's cab ceiling (center)

*Figure 10*—Continued.


ADJUSTABLE SPOTLIGHT CONTROL
CONTROL HANDLE
CONTROL SWITCH
G
EMC 3825-213-10/10 ⑦

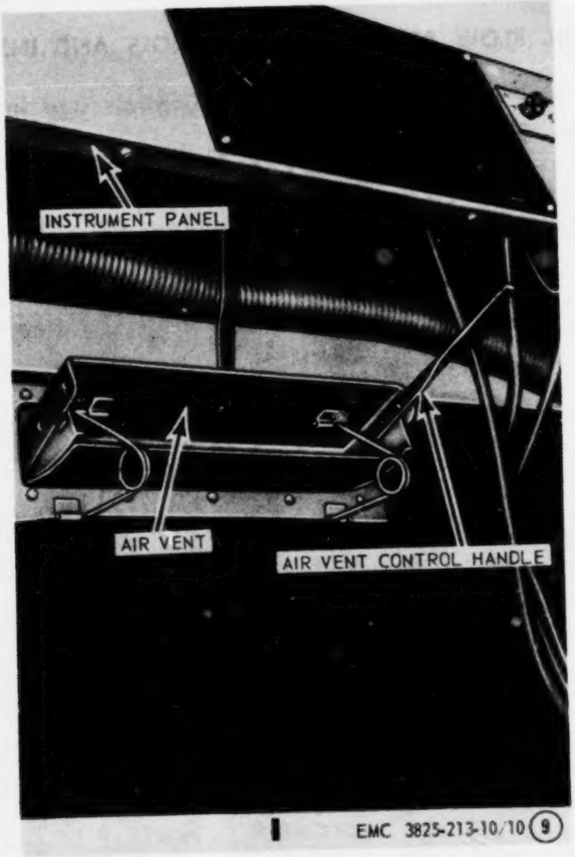
G. Operator's cab ceiling (right)

*Figure 10*—Continued.


TRANSFER SHIFT LEVER
TRANSMISSION SHIFT LEVER
BACKUP LIGHT SWITCH
H
EMC 3825-213-10/10 ⑧

H. Operator's cab floor (right side)

*Figure 10*—Continued.


INSTRUMENT PANEL
AIR VENT
AIR VENT CONTROL HANDLE
EMC 3825-213-10/10 ⑨

I. Operator's cab, front

*Figure 10*—Continued.

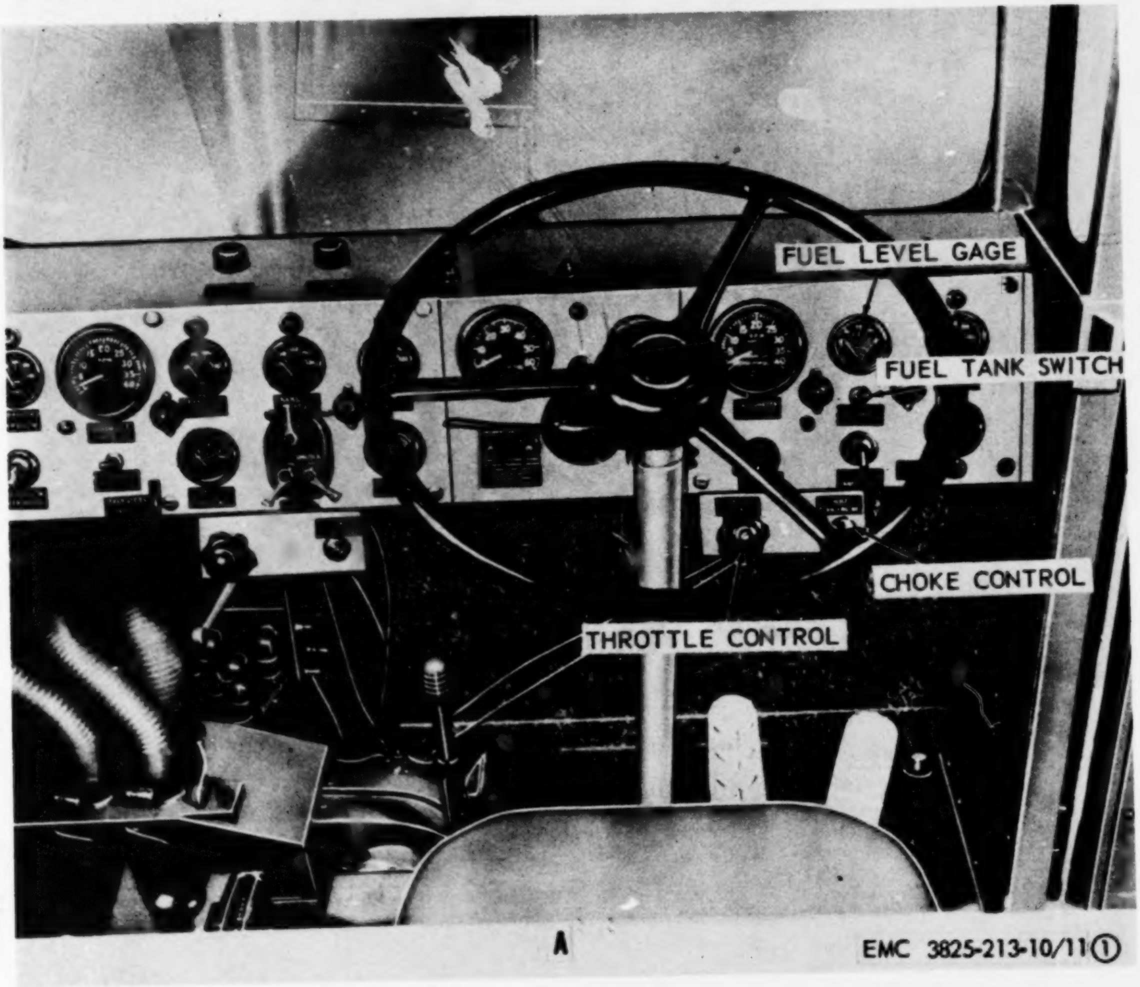
## Section III. PLOW AND ENGINE CONTROLS AND INSTRUMENTS

### 13. General

This section describes, locates, illustrates, and furnishes the operator, crew, or driver sufficient information about the various controls and instruments for proper operation of the plow unit.

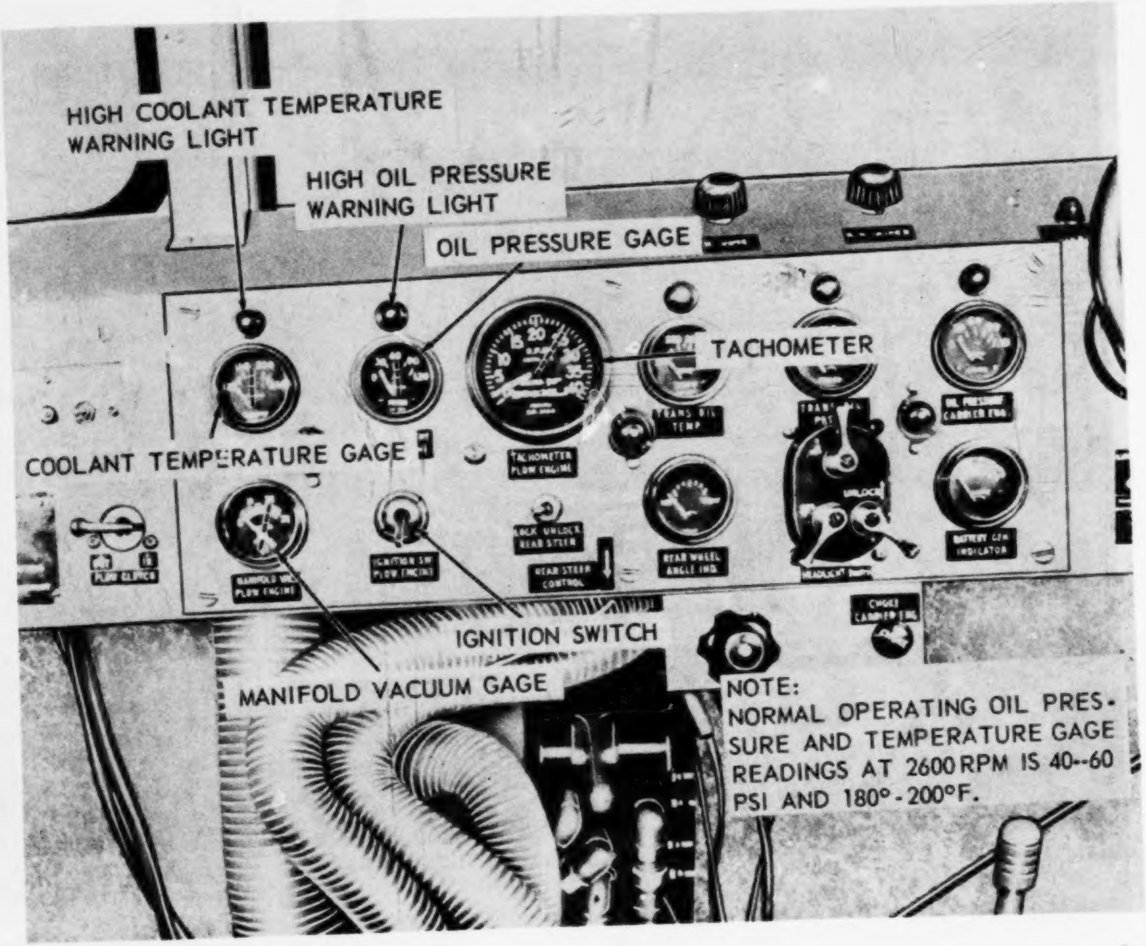
### 14. Controls and Instruments

The purposes and use of the plow unit controls and normal readings of the plow unit instruments and gages are illustrated in figure 11.


FUEL LEVEL GAGE
FUEL TANK SWITCH
CHOKE CONTROL
THROTTLE CONTROL
A
EMC 3825-213-10/11①

A. Operator's cab, right side

*Figure 11. Plow and engine controls and instruments.*


HIGH COOLANT TEMPERATURE WARNING LIGHT
HIGH OIL PRESSURE WARNING LIGHT
OIL PRESSURE GAGE
TACHOMETER
COOLANT TEMPERATURE GAGE
TACHOMETER PLOW ENGINE
TRANS OIL TEMP
OIL PRESSURE CARRIER ENG.
UNLOCK
LOCK UNLOCK REAR STEER
REAR STEER CONTROL
REAR WHEEL ANGLE IND.
BATTERY GEN INDICATOR
HEADLIGHT SW
PLOW CLUTCH
MANIFOLD VAC PLOW ENGINE
IGNITION SW PLOW ENGINE
CHOKE CARRIER ENG
IGNITION SWITCH
MANIFOLD VACUUM GAGE

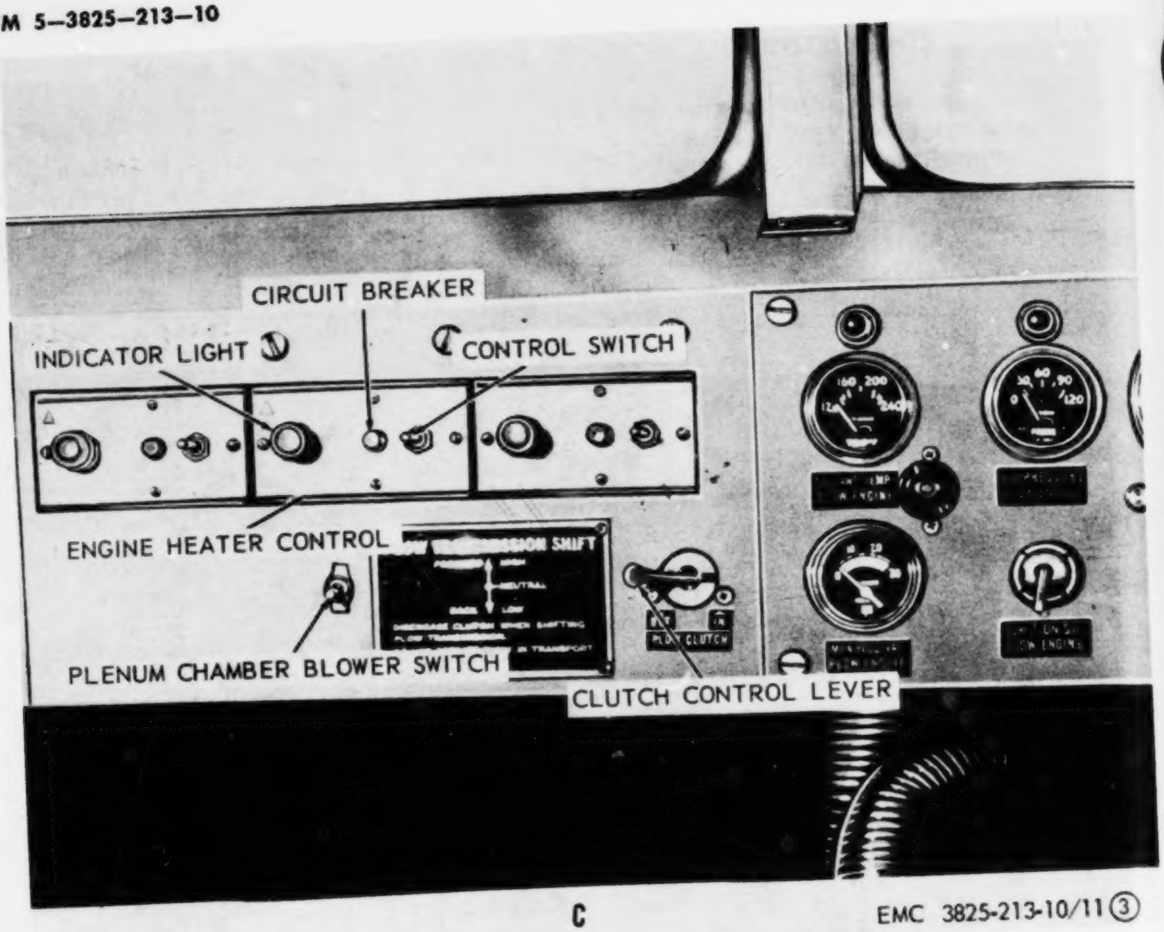
NOTE:
NORMAL OPERATING OIL PRESSURE AND TEMPERATURE GAGE READINGS AT 2600 RPM IS 40--60 PSI AND 180° - 200°F.

**B**

EMC 3825-213-10/11 ②

B. Operator's cab, center

*Figure 11*—Continued.

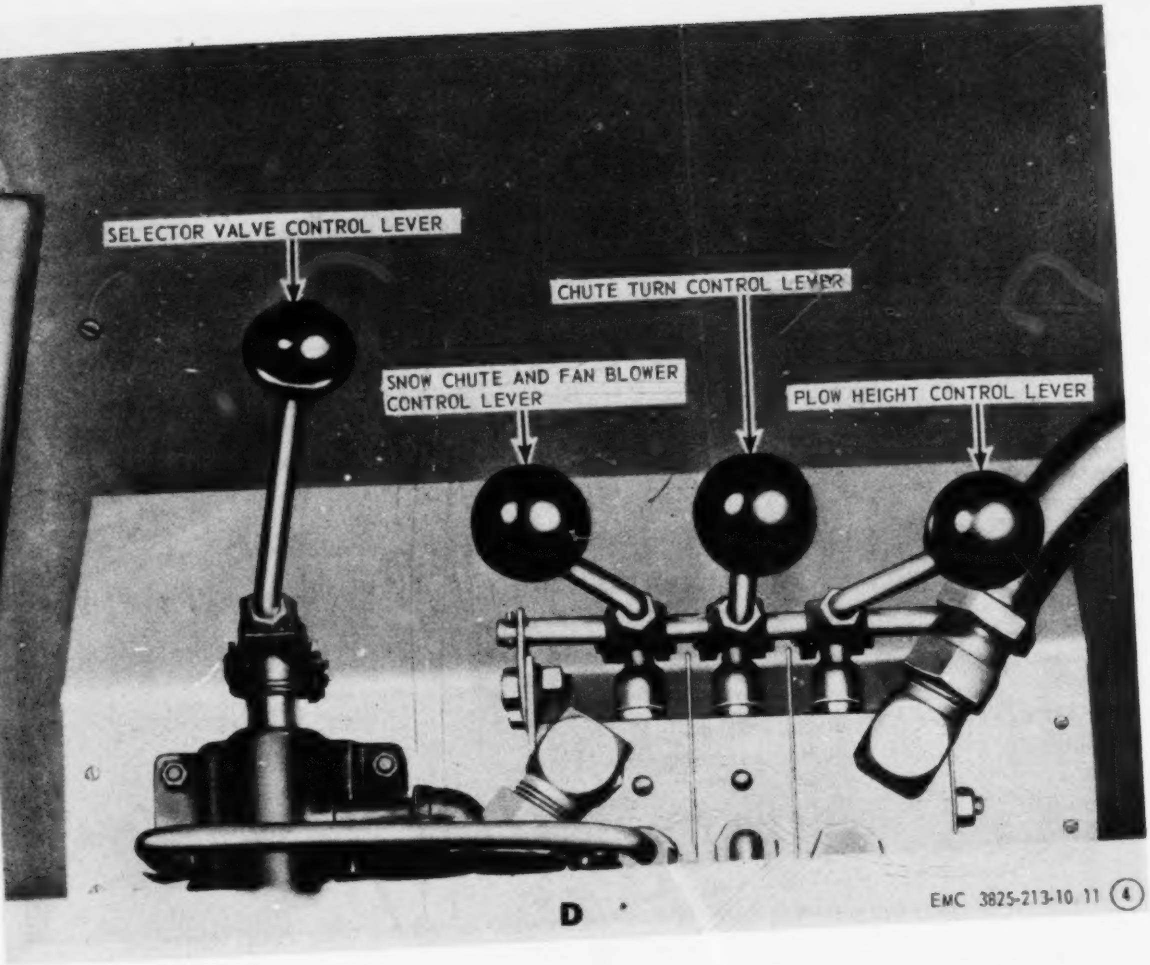

CIRCUIT BREAKER
INDICATOR LIGHT
CONTROL SWITCH
ENGINE HEATER CONTROL
PLENUM CHAMBER BLOWER SWITCH
CLUTCH CONTROL LEVER

C

EMC 3825-213-10/11③

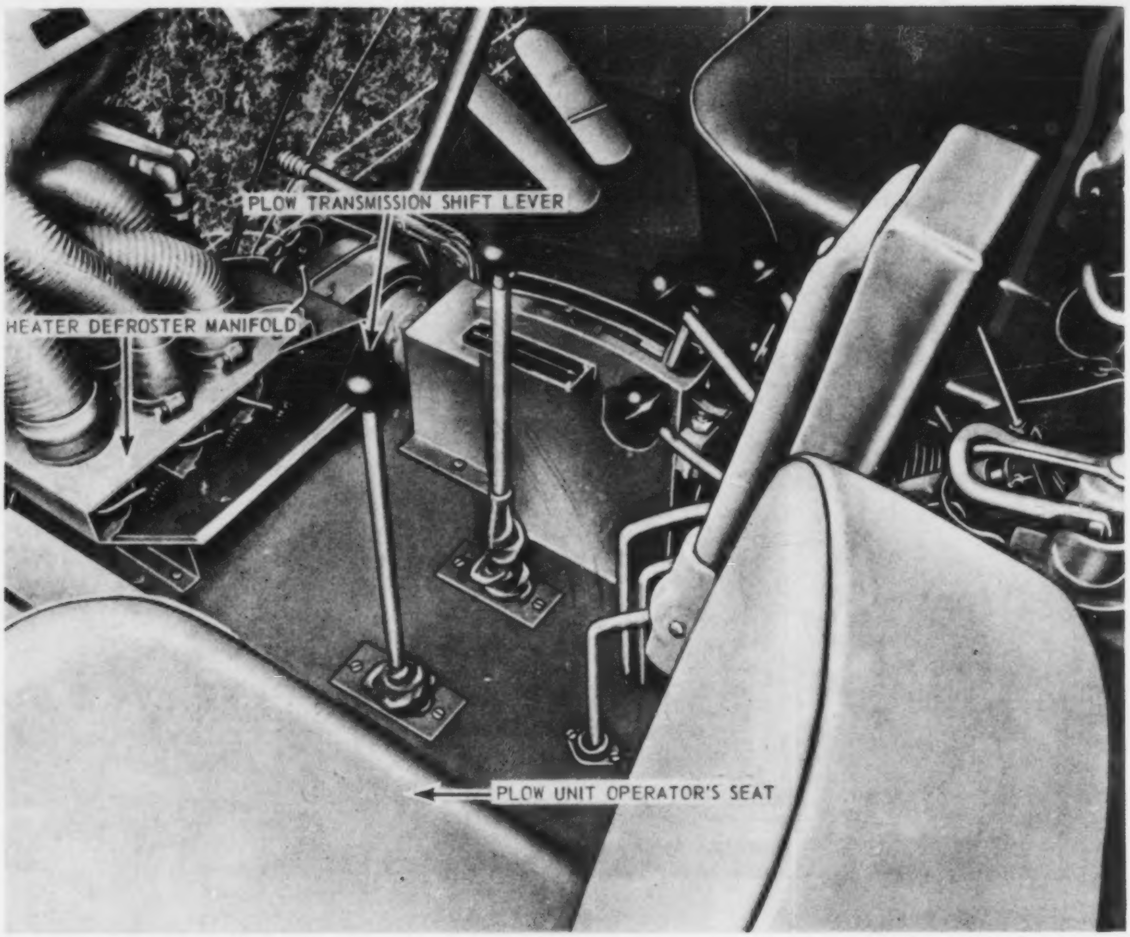
C. Operator's cab, left side

*Figure 11*—Continued.


SELECTOR VALVE CONTROL LEVER
CHUTE TURN CONTROL LEVER
SNOW CHUTE AND FAN BLOWER CONTROL LEVER
PLOW HEIGHT CONTROL LEVER
D
EMC 3825-213-10 11 ④

D. Plow controls, center cab

*Figure 11*—Continued.


PLOW TRANSMISSION SHIFT LEVER
HEATER DEFROSTER MANIFOLD
PLOW UNIT OPERATOR'S SEAT
E
EMC 3825-213-10 11(5)

E. Operator's cab floor, center

*Figure 11*—Continued.

## Section IV. OPERATION OF EQUIPMENT

### 15. General

*a*. The instructions in this section are published for the information and guidance of the personnel responsible for operation of the snow removal unit.

*b*. The operator must know how to perform every operation of which the snow removal unit is capable. This section gives instructions on starting and stopping the snow removal unit, basic motions of the snow removal unit, and on coordinating the basic motions to perform the specific tasks for which the equipment is designed. Since nearly every job presents a different problem, the operator may have to vary given procedures to fit the individual job.

### 16. Starting Carrier Engine

*a. Preparation for Starting.*

(1) Perform the before-operation services (par. 40 and fig. 30).

(2) Lubricate the snow removal unit in accordance with the current lubrication order (LO 5-3825-213-20).

*b. Starting.* Start carrier engine as illustrated in figure 12.

*Note.* Allow 5 minute warmup period before putting carrier in motion.

***Warning:*** **When it is necessary to operate the engine indoors, be sure proper ventilation is provided; the exhaust fumes are dangerous.**

*Note.* For starting carrier and plow engines in cold weather, refer to paragraphs 31 and 32 for use of the heaters and the ether starting aids before starting as instructed above.

### 17. Stopping Carrier Engine

*a.* Stop carrier engine as illustarted in figure 13.

*b.* Perform the after-operation services (par. 40 and fig. 30).

### 18. Starting Plow Engine

*a. Preparation for Starting.*

(1) Perform before-operation services (par. 40 and fig. 30).

(2) Lubricate the snow removal unit in accordance with the current lubrication order.

*b. Starting.* Start plow engine as illustrated in figure 14.

***Warning:*** **When it is necessary to operate the engine indoors, be sure proper ventilation is provided; the exhaust fumes are dangerous.**

*Note.* For starting in cold weather, refer to paragraphs 31 and 32 for use of the heaters and the ether starting aids before starting as instructed above.

### 19. Stopping Plow Engine

*a.* Stop plow engine as illustrated in figure 15.

*b.* Perform after-operation services (par. 40 and fig. 30).

### 20. Starting Carrier

*a.* Start carrier engine (fig. 12).

***Caution:*** **Be sure that all personnel are clear of the snow removal unit before starting operation.**

***Caution:*** **The accelerator and brake pedals are air-powered. Do not attempt to move the carrier until the air pressure reaches normal operating level.**

*b.* Start carrier into motion as illustrated in figure 16.

***Caution:*** **Never get on or off the snow removal unit when it is in motion.**

### 21. Stopping Carrier

*a.* Using controls illustrated in figure 17, stop the carrier.

*b.* Stop carrier engine (fig. 13).

### 22. Starting Plow

*a.* Start plow engine (fig. 14).

*b.* Start plow into motion as illustrated in figure 18.

***Caution:*** **Be sure that all personnel are clear of the snow removal unit before putting the plow unit into motion or starting operation.**

***Caution:*** **Before putting the plow unit into operation, see that no loose bars, tools, or parts are lying in or on any part of the equipment, as they could cause serious damage to the equipment or bodily injury to personnel.**

### 23. Stopping Plow

*a.* Using controls illustrated in figure 19, stop the plow.

*b.* Stop plow engine (par. 19).

### 24. Operation Under Usual Conditions

*a. General.* Close coordination is necessary between the two operators while plowing snow. Under proper operating conditions the plow engine will turn at approximately 2,600 rpm under load and have 3 to 6 inches of vacuum. When operating the engine at high idle 18 to 22 inches of vacuum is pulled. To remove the maximum amount of snow the operator should keep the machine operating at full engine load at all times. This means that the transmission should be shifted to a higher or lower speed according to the depth and density of the snow. A noticeable drop in rpm and vacuum of the engine is an indication of too heavy a load, while a rise in vacuum and rpm indicates the unit is not removing snow

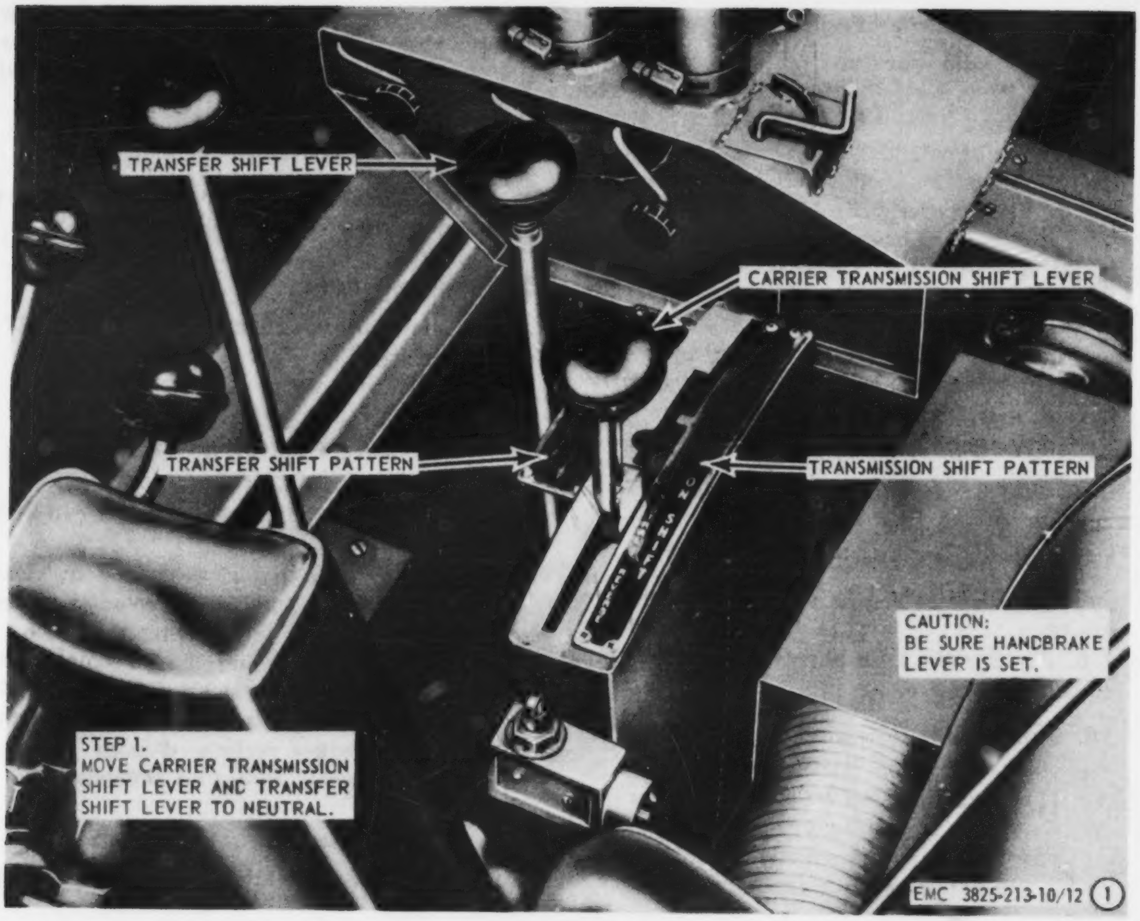

TRANSFER SHIFT LEVER
CARRIER TRANSMISSION SHIFT LEVER
TRANSFER SHIFT PATTERN
TRANSMISSION SHIFT PATTERN
CAUTION:
BE SURE HANDBRAKE LEVER IS SET.
STEP 1.
MOVE CARRIER TRANSMISSION SHIFT LEVER AND TRANSFER SHIFT LEVER TO NEUTRAL.
EMC 3825-213-10/12 ①

*Figure 12. Starting carrier engine.*

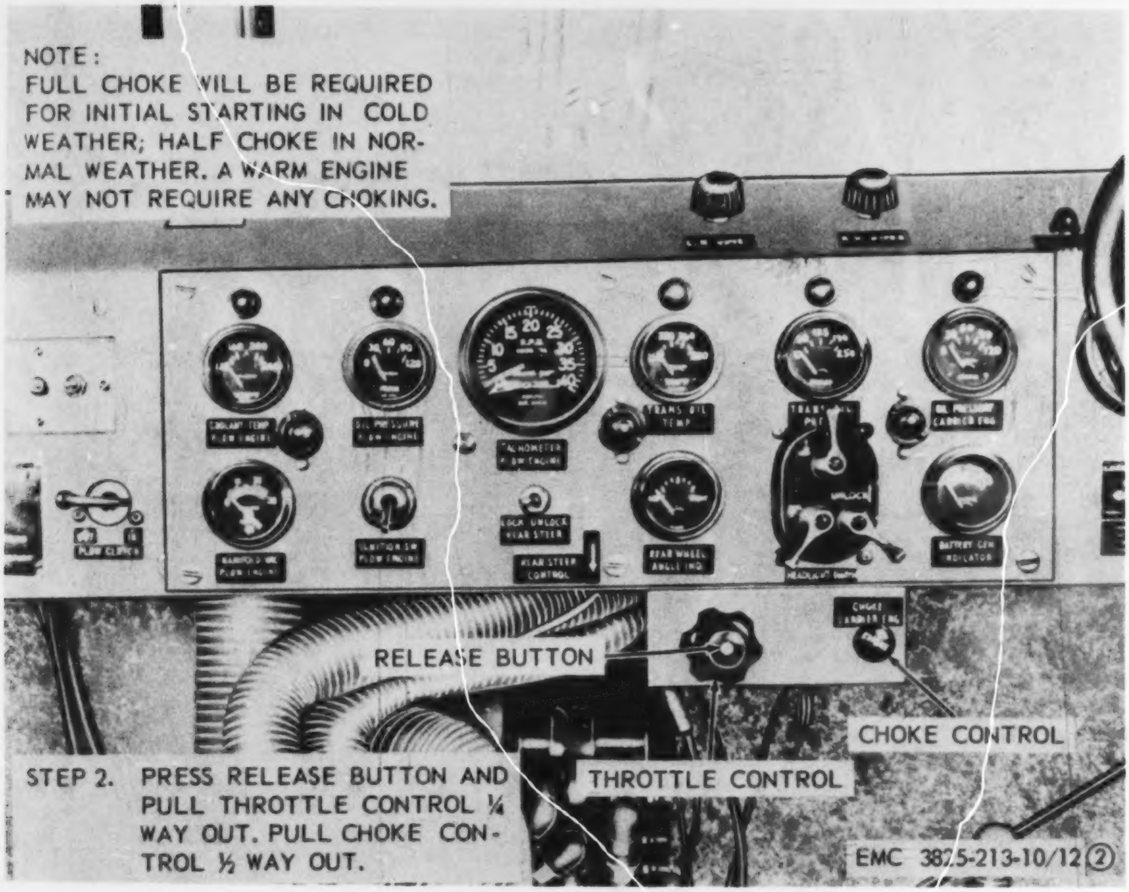
to its capacity. Casting direction and distance requirements must be determined, chute rotated and adjusted to suit the requirements before proceeding with the plowing operations. If possible always set the discharge opening so snow delivery will be with the wind. The snow removal unit is provided with a hydraulic actuated rear axle steering to aid in turning the unit and compensate for side slippage of the rear of the vehicle when side cutting snow banks and operating under other adverse conditions. Operate the rear steering as illustrated in figure 20.

*b. Plowing Freshly Fallen Snow.*

(1) Start carrier engine (fig. 12).
(2) Start plow engine (fig. 14).
(3) Start plow (fig. 18) and select the desired position (fig. 21).
(4) Start carrier (fig. 16).
(5) Adjust the forward speed of the carrier to provide the proper operating conditions (*a* above).

*c. Plowing Hard Wind Driven Snow.*

(1) Repeat *b*(1) through (4) above.
(2) Move the unit through the snow at the slowest possible speed, so that the auger discharges and feeds the snow to the impeller.
(3) In extremely hard snow, which chokes the plow, raise the plow and



NOTE:
FULL CHOKE WILL BE REQUIRED FOR INITIAL STARTING IN COLD WEATHER; HALF CHOKE IN NORMAL WEATHER. A WARM ENGINE MAY NOT REQUIRE ANY CHOKING.

STEP 2. PRESS RELEASE BUTTON AND PULL THROTTLE CONTROL ¼ WAY OUT. PULL CHOKE CONTROL ½ WAY OUT.

EMC 3825-213-10/12②

*Figure 12*—Continued.

move the snow removal unit up to the snow bank, and lower the plow slowly to break up the drift. If the snow is frozen to the ground, raise the plow and remove the snow above the frozen layer, and back up and remove the frozen layer slowly with the plow in the lowered position.

***Caution:*** **When raising, then lowering the plow to break up hard snow, lower the plow slowly.**

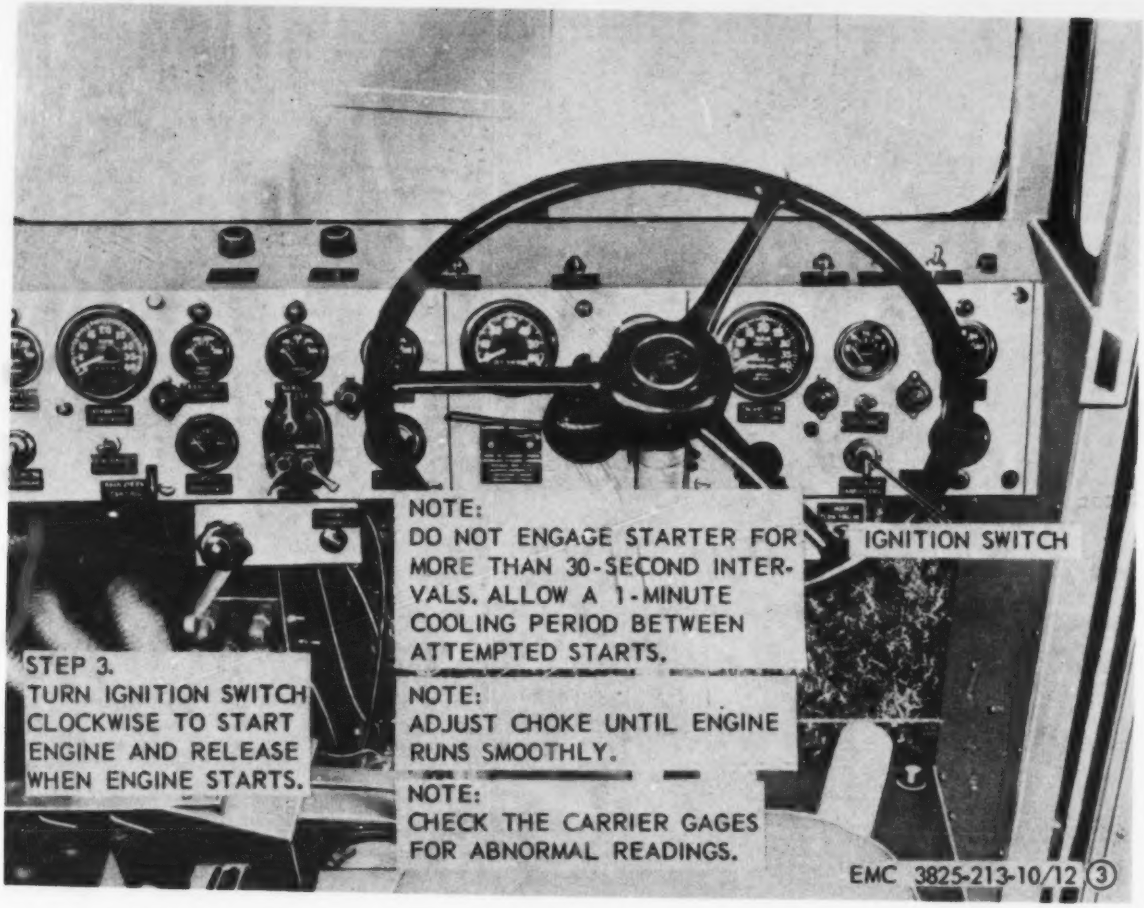
*d. Plowing Heavy, Wet Snow.*

(1) *General.* Heavy, wet snow is plowed in the same manner as freshly fallen snow. The forward speed of the snow removal unit will be slower and must be regulated carefully to avoid clogging.

(2) *Cleaning the chute.* If the forward speed is too fast, the chute will clog immediately upon beginning the plowing operation. It may be cleared by raising and lowering it several times, using the hydraulic controls. Proceed with the plowing operation at a slower forward speed.

*e. Plowing Deep Snow.*

(1) Raise the plow to its maximum height and move forward into the snow bank as far as possible.



NOTE:
DO NOT ENGAGE STARTER FOR MORE THAN 30-SECOND INTERVALS. ALLOW A 1-MINUTE COOLING PERIOD BETWEEN ATTEMPTED STARTS.

STEP 3.
TURN IGNITION SWITCH CLOCKWISE TO START ENGINE AND RELEASE WHEN ENGINE STARTS.

NOTE:
ADJUST CHOKE UNTIL ENGINE RUNS SMOOTHLY.

NOTE:
CHECK THE CARRIER GAGES FOR ABNORMAL READINGS.

*Figure 12*—Continued.

(2) Lower the plow carefully to its lowest position.

(3) Back the snow removal unit away from the snow bank and repeat (1) and (2) above. Slow forward speed is required for plowing deep snow.

*f. Removing Snow From Airport Runway.*

(1) *General.* Airport runway snow removal operation is similar to highway operation, but care must be taken to cast the snow to a point as far as possible from the runway. Avoid setting up "windrows" on the runway shoulders.

(2) *Wind direction parallel to runway.* When the wind is blowing parallel to the length of the runway, plow the first path down the center of the runway. Widen the path by plowing additional paths adjacent to the first always casting the snow away from the runway.

(3) *Wind direction across runway.* When the wind is blowing across the runway, plow the first path along the windward side of the runway casting the snow with the wind, or out onto the runway. Widen the path by plowing additional paths adjacent to the first, always casting the snow with the wind.

*g. Widening Paths Already Plowed on Highways.* Widening is often done along the edges of paths already plowed on highways.

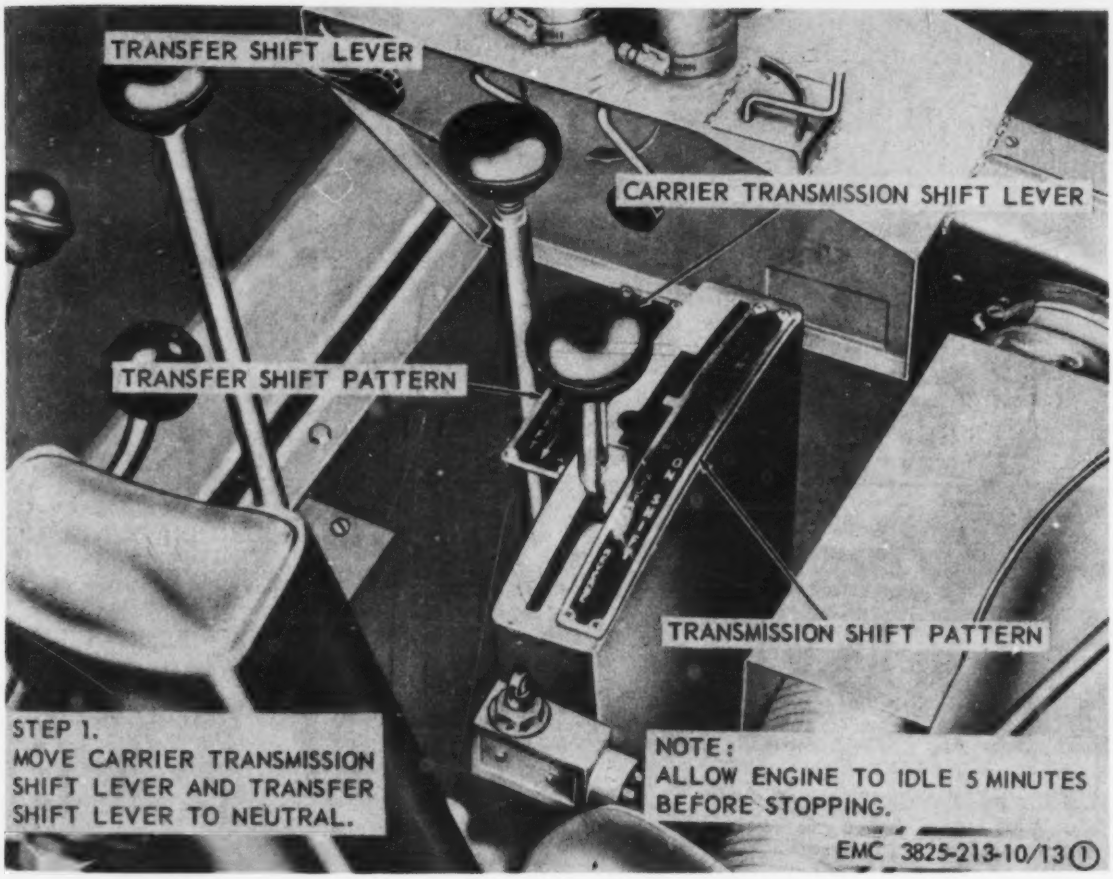

TRANSFER SHIFT LEVER
CARRIER TRANSMISSION SHIFT LEVER
TRANSFER SHIFT PATTERN
TRANSMISSION SHIFT PATTERN
STEP 1.
MOVE CARRIER TRANSMISSION SHIFT LEVER AND TRANSFER SHIFT LEVER TO NEUTRAL.
NOTE:
ALLOW ENGINE TO IDLE 5 MINUTES BEFORE STOPPING.
EMC 3825-213-10/13①

*Figure 13. Stopping carrier engine.*

In this case the snow may have been pushed upon road shoulders by a blade-type or V-type plow, and may contain or hide objects which might damage the fan unit. Exercise every precaution to avoid such concealed objects, and take extreme care to avoid slipping off the road shoulder into ditches, washouts, or cave-ins.

## 25. Operation Under Unusual Conditions

The following paragraphs contain special operating instructions necessary for proper functioning of the equipment under specific conditions such as extreme cold, rainy conditions, saltwater areas, high altitude or similiar conditions not normally encountered.

## 26. Operation in Extreme Cold (Below 0° F.)

*a. Lubrication.* Lubricate as specified in the current lubrication order and specific lubrication instructions (par. 38).

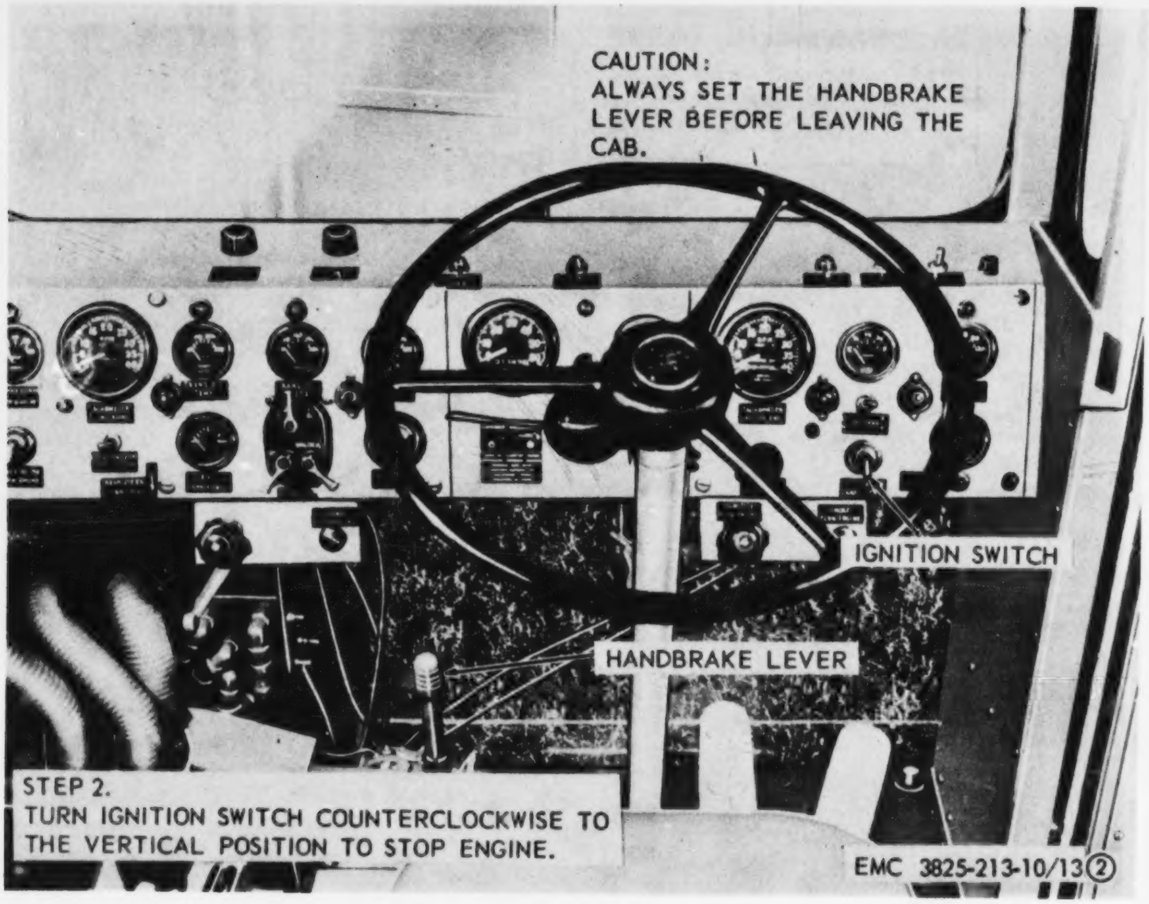
*b. Cooling System.* Inspect cooling system and correct or report any leaks.

*c. Batteries.* Keep batteries fully charged.

***Caution:*** **Run engine for one hour after adding distilled water to batteries. This permits the added water to mix with electrolyte and prevent freezing.**

***Caution:*** **Keep fuel tank full at all times to prevent condensation.**

*d. Fan.* Due to severe conditions of frozen ice or snow the fan may become bent or



CAUTION:
ALWAYS SET THE HANDBRAKE LEVER BEFORE LEAVING THE CAB.

STEP 2.
TURN IGNITION SWITCH COUNTERCLOCKWISE TO THE VERTICAL POSITION TO STOP ENGINE.

*Figure 13*—Continued.

broken. Do not operate the unit with a broken or bent fan.

*e. Augers.* Check augers frequently for alinement, and report any bends or dents.

*f. Hydraulic System.* Check the oil level, and keep vent in filler plug open.

## 27. Operation in Salt-Water Areas

*a. General.* Wash unit frequently with clean, fresh water. Do not contaminate fuel system or damage electrical equipment.

*b. Protection.* Coat exposed metal surfaces with rustproofing material. Remove rust immediately and apply paint and/or oil as applicable.

*c. Cooling System.* Be sure water used in the cooling system is free of salt and alkali.

***Caution:* The cooling system is not intended for use with salt water. However, salt water may be used in an emergency. Drain, flush, and refill the system with proper coolant at first opportunity.**

*d. Electrical System.* Keep the electrical system clean and dry. Wipe off excess moisture and salt deposits. Pay particular attention to electrical connections.

*e. Batteries.* Keep the battery dry and free from corrosion. Coat the terminals with a light application of grease to prevent corrosion.

***Caution:* Keep electrical leads dry and in good condition.**

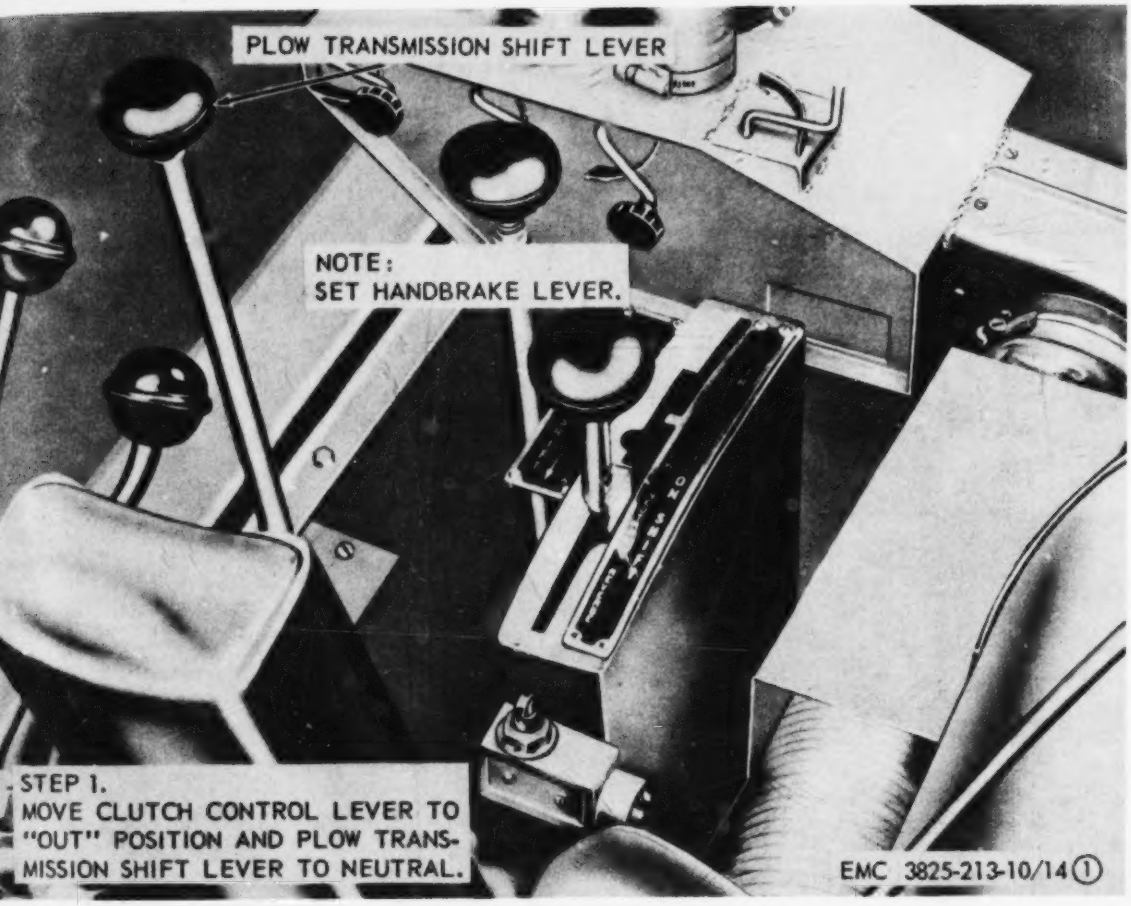

PLOW TRANSMISSION SHIFT LEVER
NOTE:
SET HANDBRAKE LEVER.
STEP 1.
MOVE CLUTCH CONTROL LEVER TO "OUT" POSITION AND PLOW TRANSMISSION SHIFT LEVER TO NEUTRAL.
EMC 3825-213-10/14①

*Figure 14. Starting plow engine.*

## 28. Operation at High Altitudes

*a. General.* The snowplow is designed to operate under normal conditions at altitudes up to 5,000 feet above sea level without special attention. Operation at higher altitudes presents special problems due to lower atmospheric pressure and wide differences in temperature during the day and night.

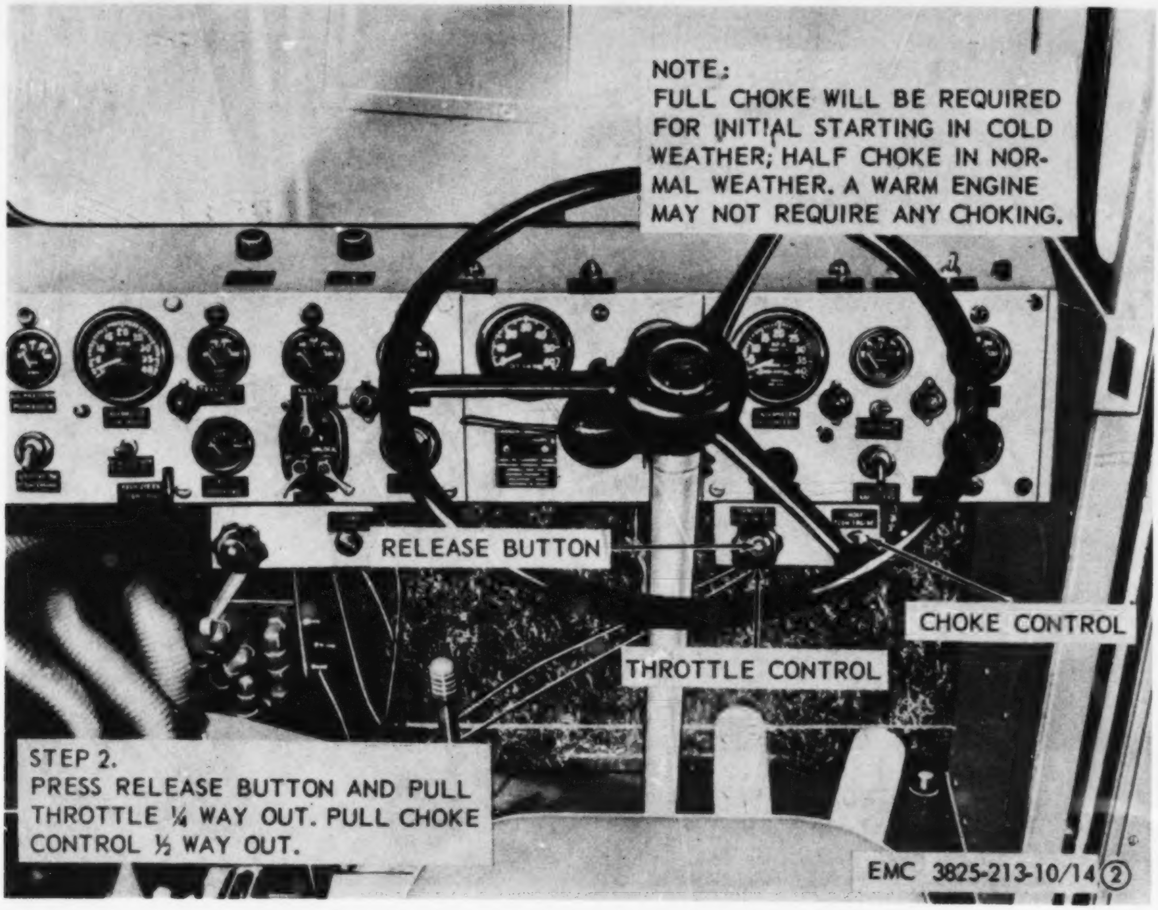
*b. Careburetor.* Adjust the carburetor to compensate for variance in atmospheric pressure.

*c. Brakes.* The pressure delivered by the brake system may decrease at high altitudes. The operator must give this careful consideration when heavy demands are made on the braking system.

*d. Air Cleaner.* Clean and service the air cleaner daily (fig. 33) so that the maximum air intake can be accomplished for most efficient operation.

*e. Tires.* Check for slow leaks that might occur at high altitudes.

*f. Cooling System.* Keep the cooling system clean and filled to the proper level (fig. 36). Check frequently, as water evaporates more rapidly at high altitudes.


NOTE:
FULL CHOKE WILL BE REQUIRED FOR INITIAL STARTING IN COLD WEATHER; HALF CHOKE IN NORMAL WEATHER. A WARM ENGINE MAY NOT REQUIRE ANY CHOKING.

STEP 2.
PRESS RELEASE BUTTON AND PULL THROTTLE ¼ WAY OUT. PULL CHOKE CONTROL ½ WAY OUT.

*Figure 14*—Continued.

## Section V. OPERATION OF AUXILIARY MATERIAL USED IN CONJUNCTION WITH EQUIPMENT

### 29. Fire Extinguisher (Monobromotrifluoromethane Type)

*a. Description.* The monobromotrifluoromethane type fire extinguisher replaces the carbon tetrachloride type fire extinguishers used in the past. It is generally suitable for use on all types of fire, with exception of fires involved with LOX (liquid oxygen) generating equipment. The fire extinguisher is furnished with a disposable type cylinder.

*b. Operation.* To operate the fire extinguisher perform the following operations:

(1) Remove fire extinguisher from its location.

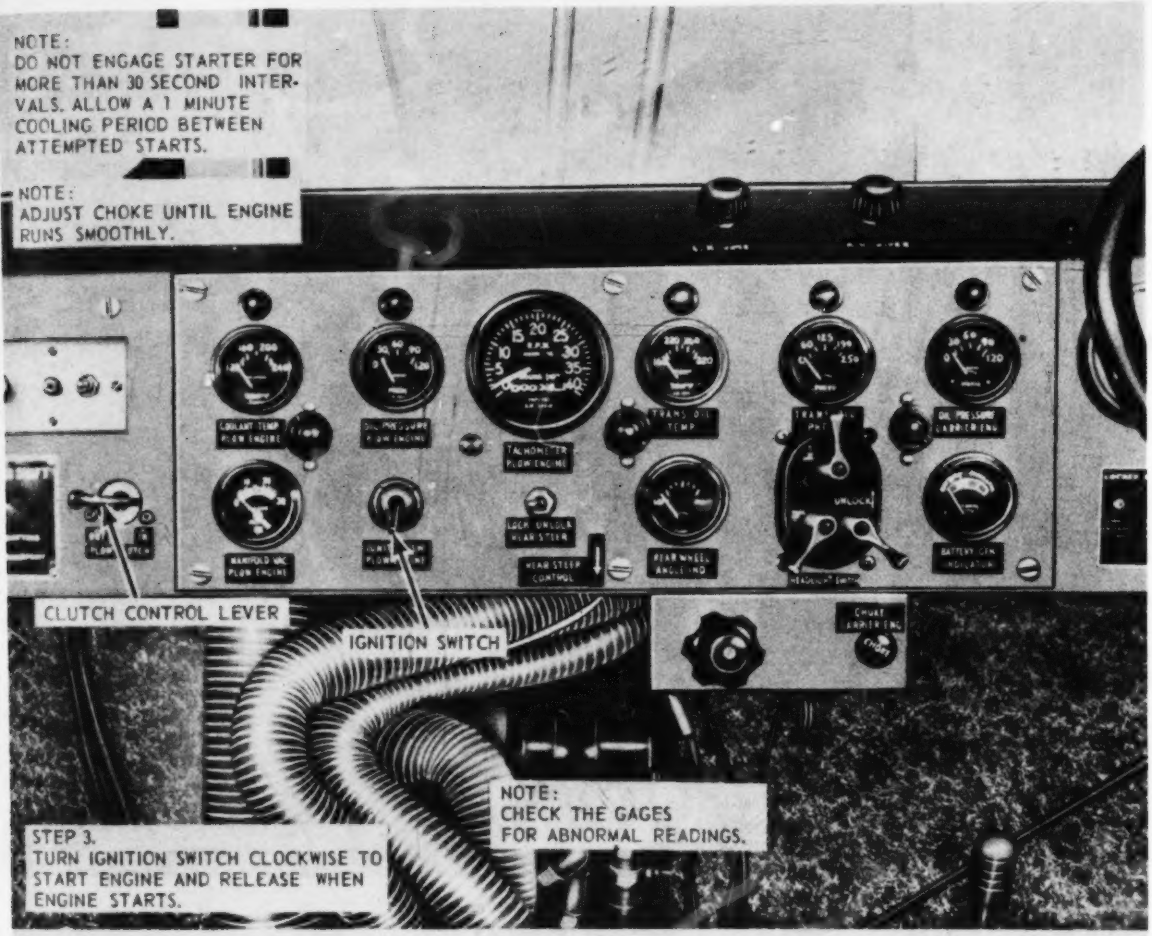
(2) Break the seal by pulling the safety pin from the handle.

(3) Point the horn at the base of the flame.

(4) Depress trigger for discharge and direct the stream of contents at the base of the fire.

***Warning:*** **Avoid breathing of smoke.**

(5) Replace with new cylinder immediately after using.


CLUTCH CONTROL LEVER
IGNITION SWITCH
COOLANT TEMP PLOW ENGINE
OIL PRESSURE PLOW ENGINE
TACHOMETER PLOW ENGINE
TRANS OIL TEMP
OIL PRESSURE CARRIER ENG
MANIFOLD VAC PLOW ENGINE
LOCK UNLOCK REAR STEER
REAR STEER CONTROL
REAR WHEEL ANGLE IND
UNLOCK
HEADLIGHT SWITCH
BATTERY GEN INDICATOR
CHOKE CARRIER ENG
CHOKE

NOTE:
DO NOT ENGAGE STARTER FOR MORE THAN 30 SECOND INTERVALS. ALLOW A 1 MINUTE COOLING PERIOD BETWEEN ATTEMPTED STARTS.

NOTE:
ADJUST CHOKE UNTIL ENGINE RUNS SMOOTHLY.

NOTE:
CHECK THE GAGES FOR ABNORMAL READINGS.

STEP 3.
TURN IGNITION SWITCH CLOCKWISE TO START ENGINE AND RELEASE WHEN ENGINE STARTS.

C

EMC 3825-213-10/14 ③

*Figure 14*—Continued.

*c. Replacement of Cylinder.* To replace with new cylinder, perform the following operations:

(1) Press lever to release pressure from old cylinder.

(2) Loosen swivel valve coupling nut and remove the valve assembly from used cylinder.

(3) Remove instruction band from used cylinder.

(4) Place new cylinder through the instruction band.

(5) Replace safety pin in valve and seal pin with seal wire.

(6) Attach valve assembly and tighten swivel coupling nut on the new cylinder and replace fire extinguisher in mounting bracket.

(7) Adjust instruction band on cylinder to show maintenance and operating instructions.

*d. Maintenance.* Weigh fire extinguisher every 3 months and replace cylinder if gross

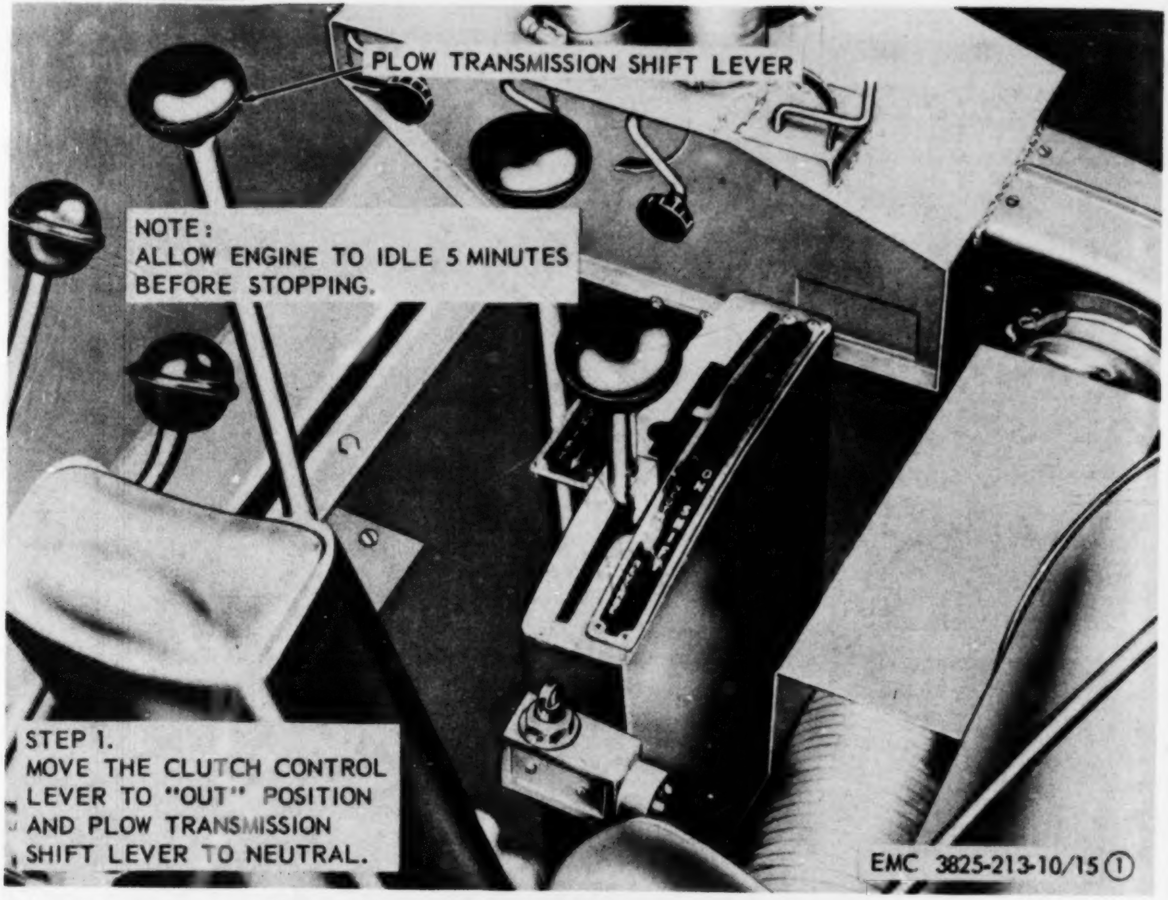

PLOW TRANSMISSION SHIFT LEVER
NOTE: ALLOW ENGINE TO IDLE 5 MINUTES BEFORE STOPPING.
STEP 1. MOVE THE CLUTCH CONTROL LEVER TO "OUT" POSITION AND PLOW TRANSMISSION SHIFT LEVER TO NEUTRAL.
EMC 3825-213-10/15 ①

*Figure 15. Stopping plow engine.*

weight has decreased 4 ounces or more. Lubricate cylinder neck threads with one drop of OE 30 oil before reassembly.

## 30. Fire Extinguisher (Carbon Dioxide Type)

*a. Description.* The carbon dioxide type fire extinguisher is suitable for use on electrical and flammable liquid fires. The carbon dioxide types are of the 5- and 15-pound sizes.

*b. Operation.* Remove the fire extinguisher from its location, break the seal, operate the control valve, and direct the stream of contents at the base of the flame.

*c. Refilling and Maintenance.* For detailed instructions on refilling and maintenance of carbon dioxide type fire extinguisher refer to TM 5–687 and TM 9–1799.

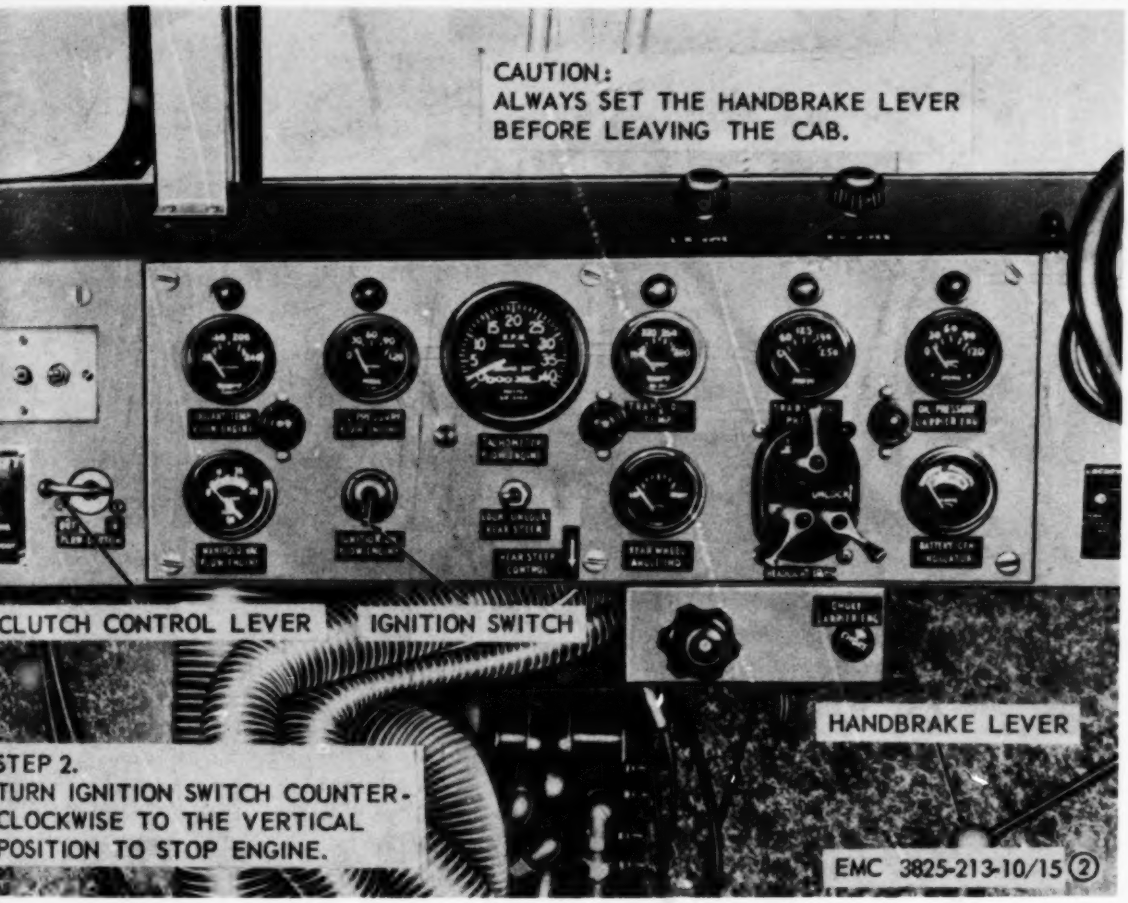
## 31. Plow and Carrier Engines Ether Starting Aids

*a. Description.* The ether starting aids are located at the rear of the cab. They are capsule holding, manually operated controls. Ether is added to the engine fuel to facilitate starting in cold weather.

*b. Operation.* Operate the ether starting aids as instructed in figure 22.

## 32. Engine Heaters

*a. Description.* Both the carrier and plow engines are equipped with heaters, as part of the winterization equipment. The purpose of these heaters is to heat the coolant and crankcase oil for both engines. The carrier engine



CAUTION:
ALWAYS SET THE HANDBRAKE LEVER
BEFORE LEAVING THE CAB.

STEP 2.
TURN IGNITION SWITCH COUNTER-
CLOCKWISE TO THE VERTICAL
POSITION TO STOP ENGINE.

EMC 3825-213-10/15 ②

*Figure 15*—Continued.

heater is located on the carrier frame near the front of the carrier engine. The plow engine heater is located just in front of the plow engine.

*b. Operation.* Operate engine heaters as instructed in figure 23.

## 33. Personnel Heater

*a. Description.* The fresh air heater is designed to supply large quantities of heated fresh air for the purpose of heating the operator's cab and the battery box, and to furnish sufficient heat to the defroster tubes for defrosting the windshield. Operation of the heater is controlled by a manual control switch. The supply of heated air is controlled by use of a manually operated damper lever.

*b. Operation.* Operate personnel heater as illustrated in figure 23.

## 34. Slave Receptacle

*a. Description.* The slave receptacle is located near the catwalk at the rear of the unit, right side. It is used as a battery charging receptacle and also used as a connection for a jumper cable to start the engine when the batteries are low.

*b. Operation.* Operate the slave receptacle as instructed in figure 24.

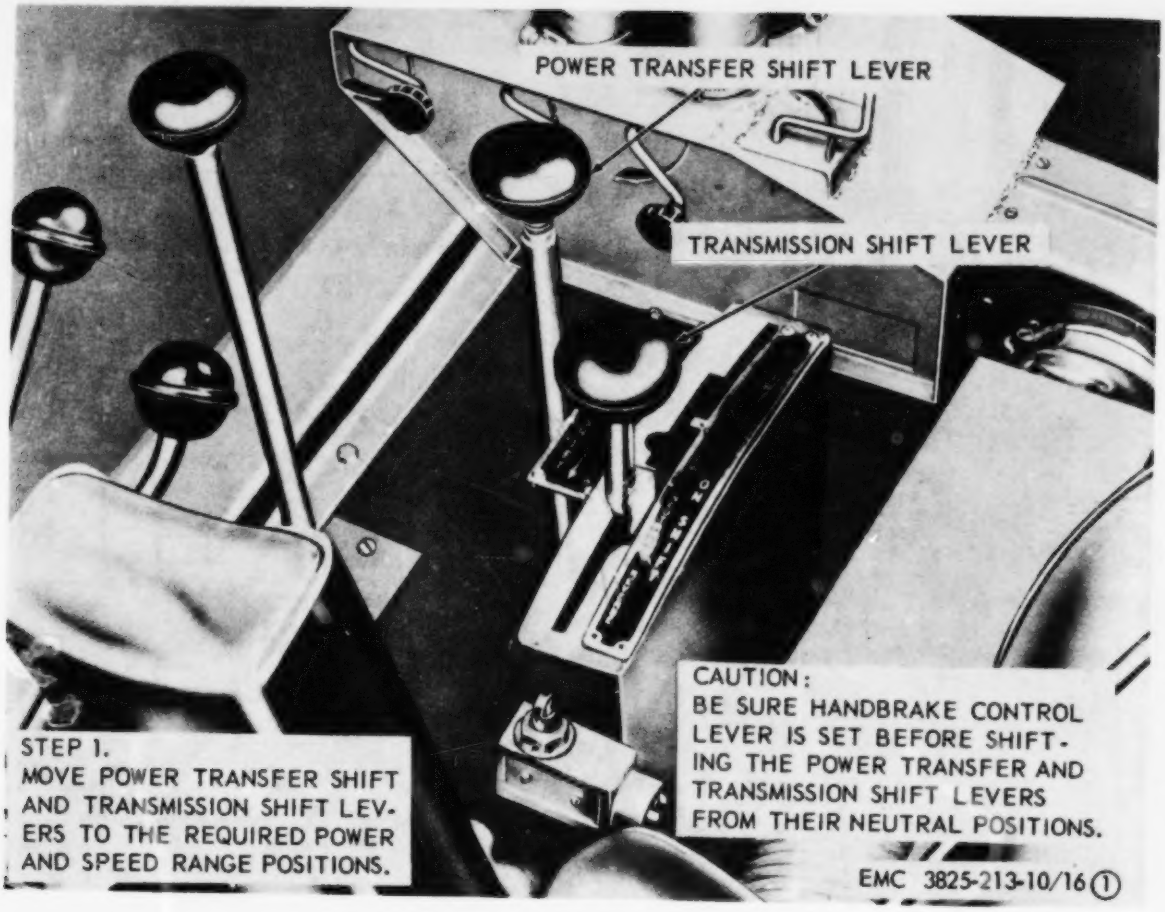
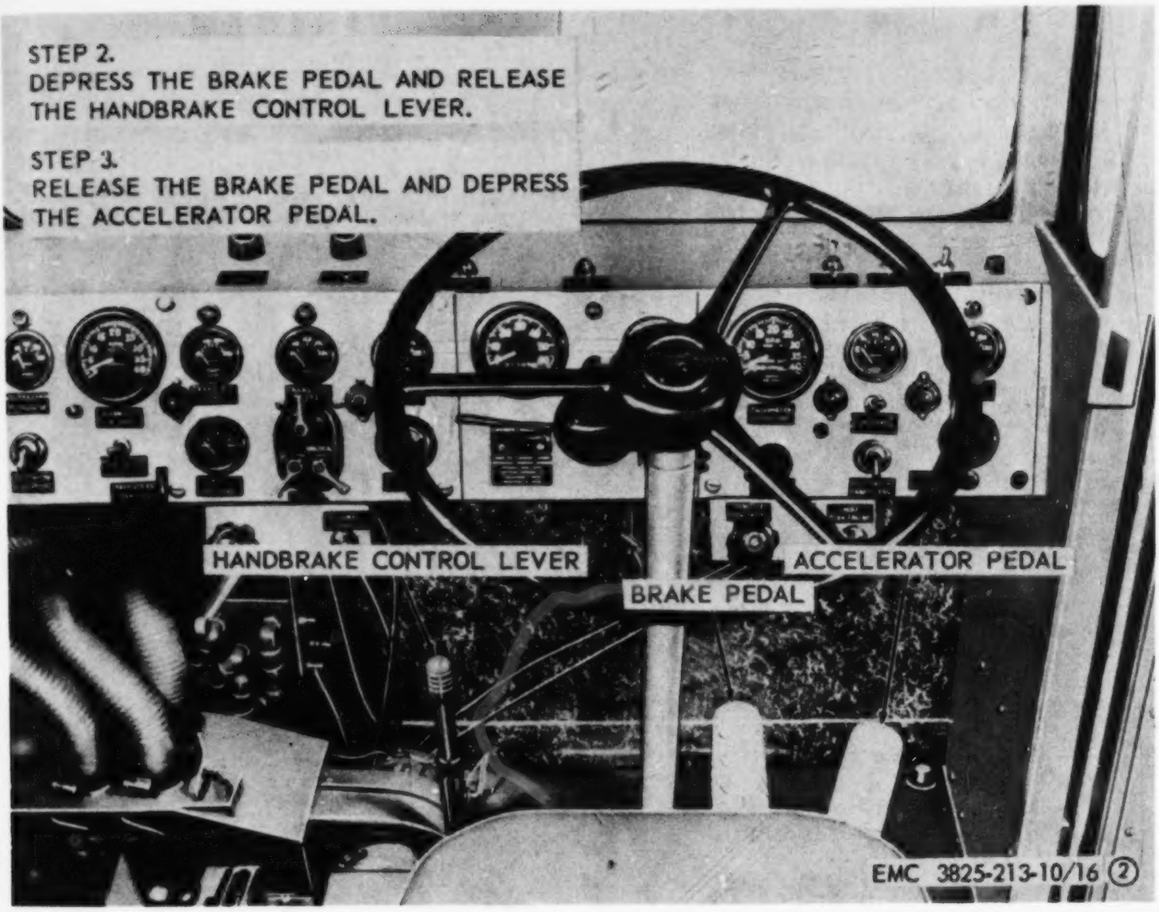

POWER TRANSFER SHIFT LEVER
TRANSMISSION SHIFT LEVER
STEP 1.
MOVE POWER TRANSFER SHIFT AND TRANSMISSION SHIFT LEVERS TO THE REQUIRED POWER AND SPEED RANGE POSITIONS.
CAUTION:
BE SURE HANDBRAKE CONTROL LEVER IS SET BEFORE SHIFTING THE POWER TRANSFER AND TRANSMISSION SHIFT LEVERS FROM THEIR NEUTRAL POSITIONS.
EMC 3825-213-10/16①

*Figure 16. Starting carrier.*

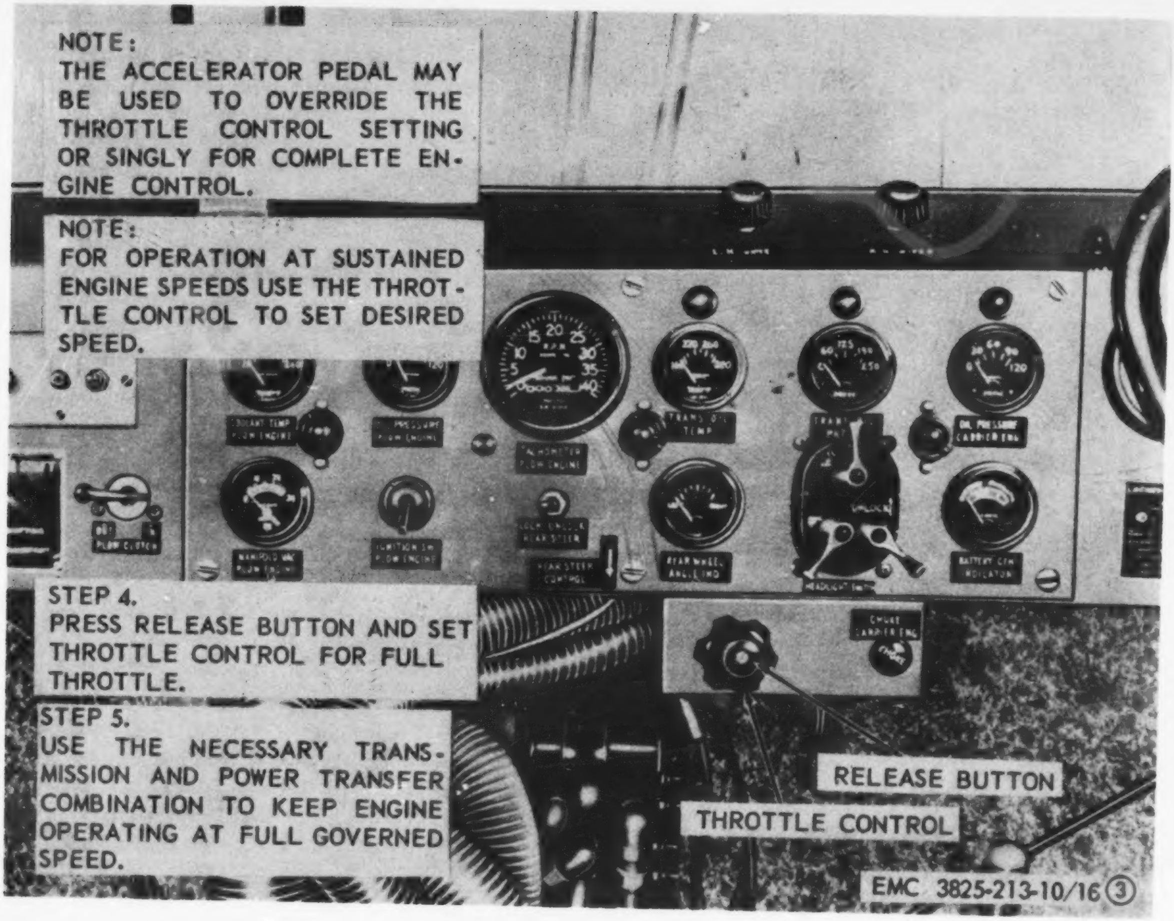


STEP 2.
DEPRESS THE BRAKE PEDAL AND RELEASE THE HANDBRAKE CONTROL LEVER.

STEP 3.
RELEASE THE BRAKE PEDAL AND DEPRESS THE ACCELERATOR PEDAL.

HANDBRAKE CONTROL LEVER
ACCELERATOR PEDAL
BRAKE PEDAL
EMC 3825-213-10/16 ②

*Figure 16*—Continued.


COOLANT TEMP PLOW ENGINE
OIL PRESSURE PLOW ENGINE
TACHOMETER PLOW ENGINE
TRANS OIL TEMP
OIL PRESSURE CARRIER ENG
MANIFOLD VAC PLOW ENGINE
IGNITION SW PLOW ENGINE
LOCK-UNLOCK REAR STEER
REAR STEER CONTROL
REAR WHEEL ANGLE IND
UNLOCK
HEADLIGHT SW
BATTERY GEN INDICATOR
CHOKE CARRIER ENG
CHOKE
PLOW CLUTCH
RELEASE BUTTON
THROTTLE CONTROL

NOTE:
THE ACCELERATOR PEDAL MAY BE USED TO OVERRIDE THE THROTTLE CONTROL SETTING OR SINGLY FOR COMPLETE ENGINE CONTROL.

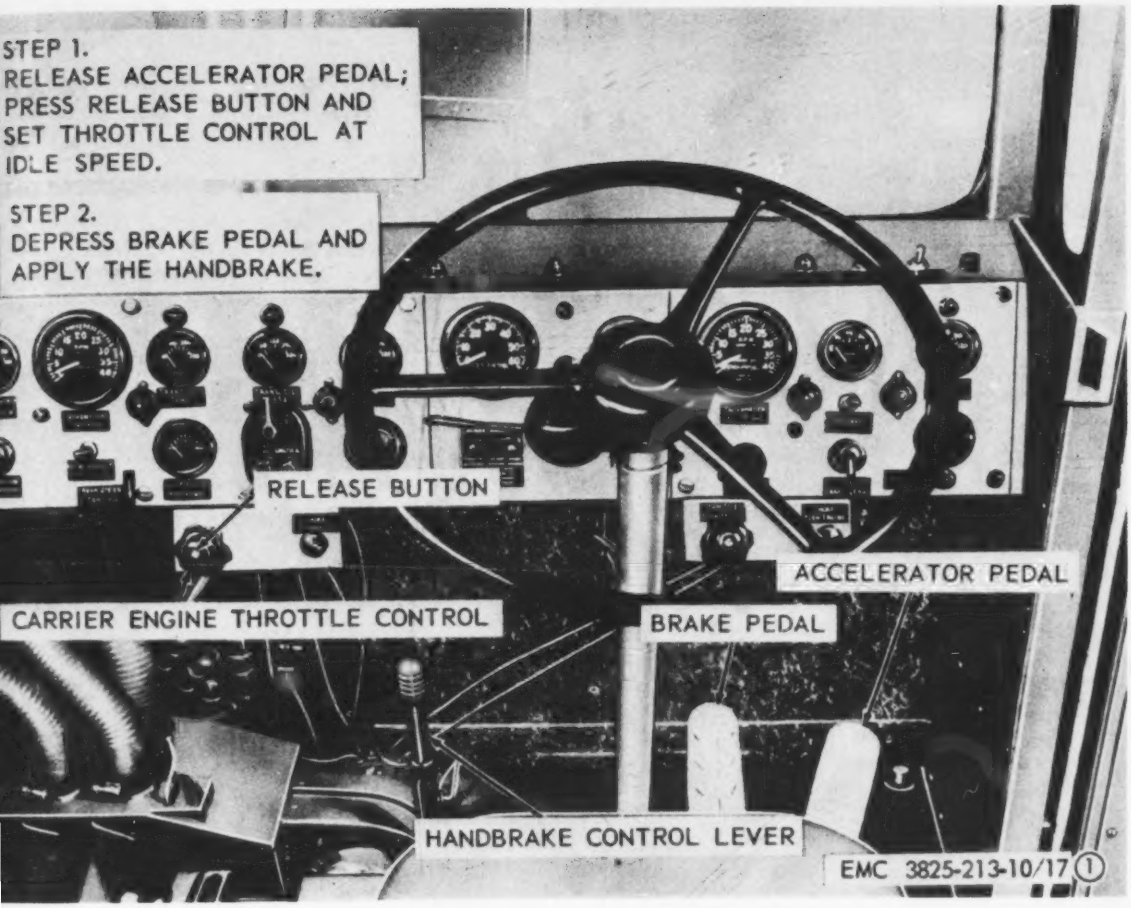
NOTE:
FOR OPERATION AT SUSTAINED ENGINE SPEEDS USE THE THROTTLE CONTROL TO SET DESIRED SPEED.

STEP 4.
PRESS RELEASE BUTTON AND SET THROTTLE CONTROL FOR FULL THROTTLE.

STEP 5.
USE THE NECESSARY TRANSMISSION AND POWER TRANSFER COMBINATION TO KEEP ENGINE OPERATING AT FULL GOVERNED SPEED.

EMC 3825-213-10/16 ③

*Figure 16*—Continued.

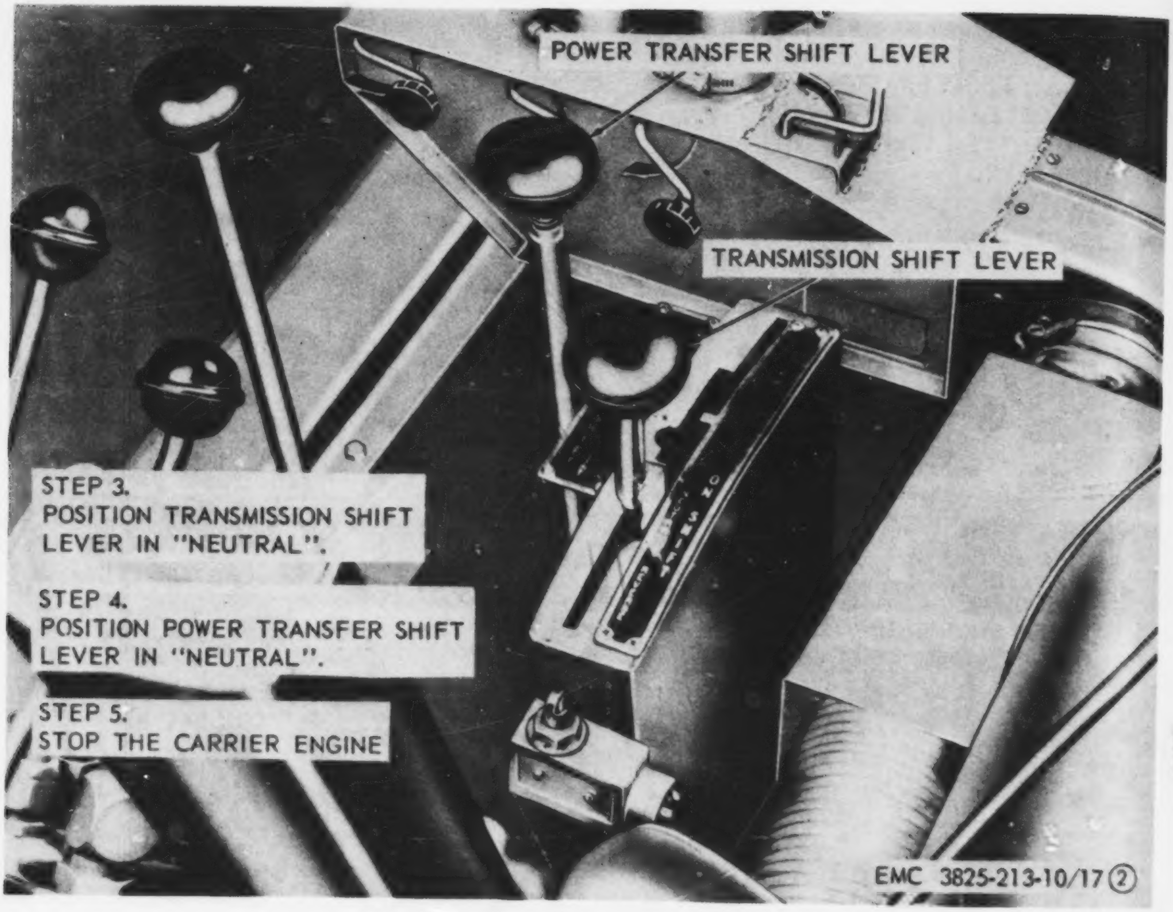


STEP 1.
RELEASE ACCELERATOR PEDAL; PRESS RELEASE BUTTON AND SET THROTTLE CONTROL AT IDLE SPEED.

STEP 2.
DEPRESS BRAKE PEDAL AND APPLY THE HANDBRAKE.

RELEASE BUTTON
ACCELERATOR PEDAL
CARRIER ENGINE THROTTLE CONTROL
BRAKE PEDAL
HANDBRAKE CONTROL LEVER
EMC 3825-213-10/17 ①

*Figure 17. Stopping carrier.*


POWER TRANSFER SHIFT LEVER
TRANSMISSION SHIFT LEVER

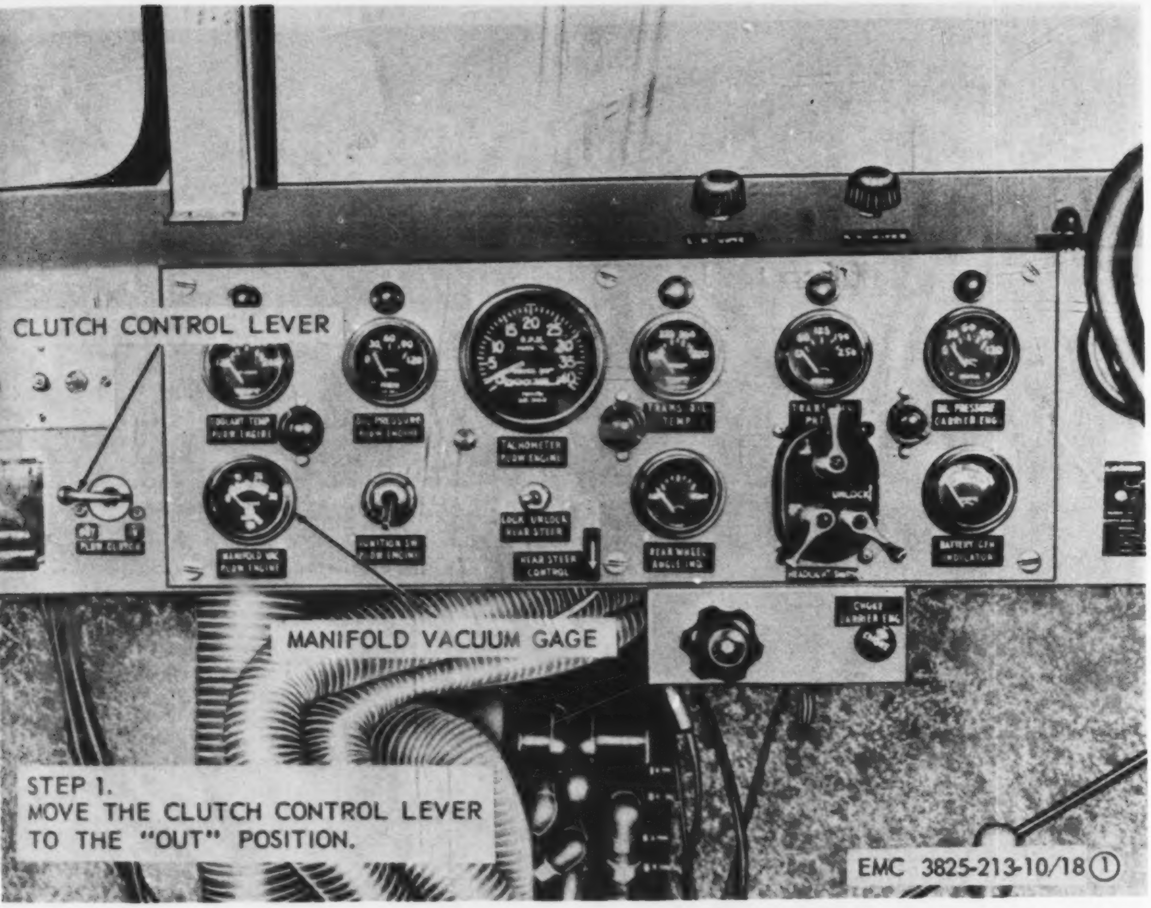
STEP 3.
POSITION TRANSMISSION SHIFT LEVER IN "NEUTRAL".

STEP 4.
POSITION POWER TRANSFER SHIFT LEVER IN "NEUTRAL".

STEP 5.
STOP THE CARRIER ENGINE

EMC 3825-213-10/17 ②

*Figure 17*—Continued.


TACHOMETER PLOW ENGINE
COOLANT TEMP PLOW ENGINE
OIL PRESSURE PLOW ENGINE
TRANS OIL TEMP
OIL PRESSURE CARRIER ENG
MANIFOLD VAC PLOW ENGINE
IGNITION SW PLOW ENGINE
LOCK UNLOCK REAR STEER
REAR STEER CONTROL
REAR WHEEL ANGLE IND.
BATTERY GEN INDICATOR
PLOW CLUTCH
CHOKE CARRIER ENG
UNLOCK

CLUTCH CONTROL LEVER

MANIFOLD VACUUM GAGE

STEP 1.
MOVE THE CLUTCH CONTROL LEVER TO THE "OUT" POSITION.

EMC 3825-213-10/18①

*Figure 18. Starting plow.*

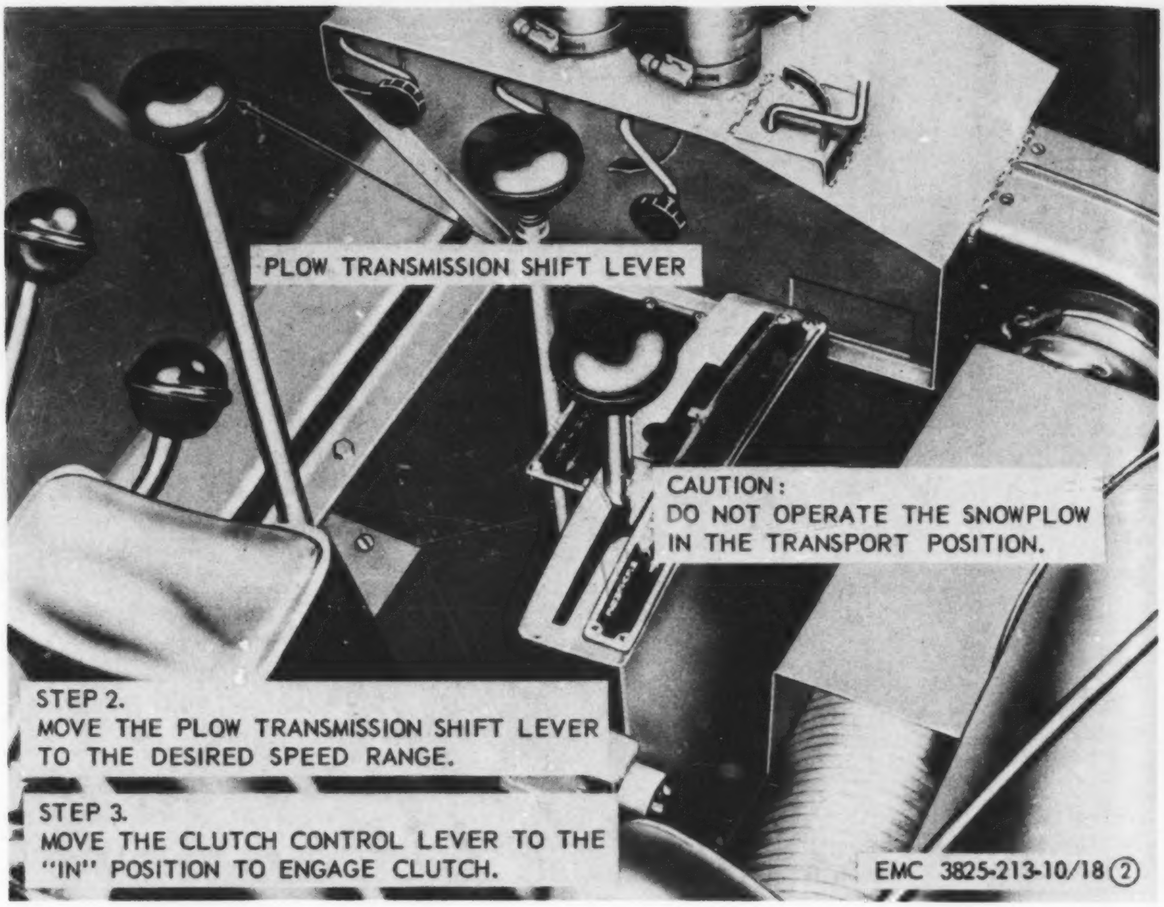
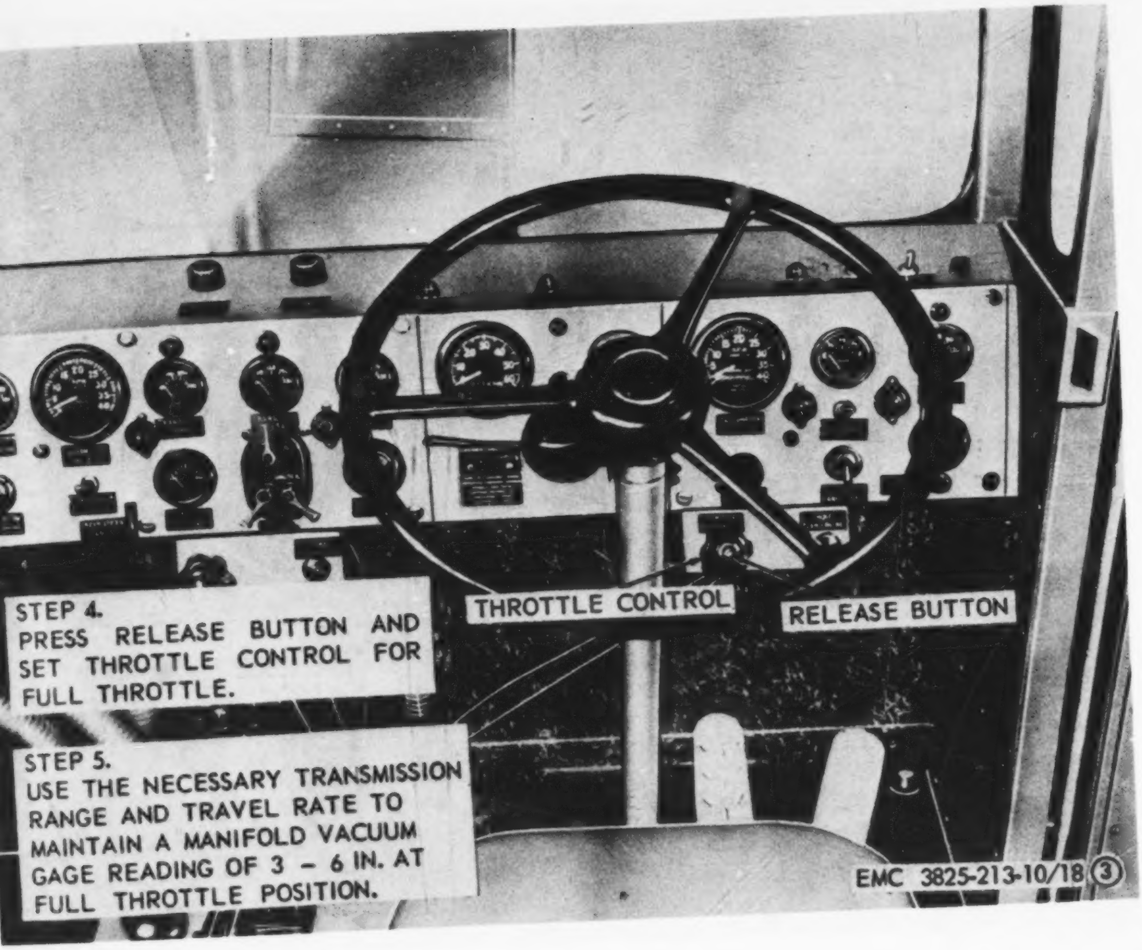

PLOW TRANSMISSION SHIFT LEVER
CAUTION:
DO NOT OPERATE THE SNOWPLOW IN THE TRANSPORT POSITION.
STEP 2.
MOVE THE PLOW TRANSMISSION SHIFT LEVER TO THE DESIRED SPEED RANGE.
STEP 3.
MOVE THE CLUTCH CONTROL LEVER TO THE "IN" POSITION TO ENGAGE CLUTCH.
EMC 3825-213-10/18 ②

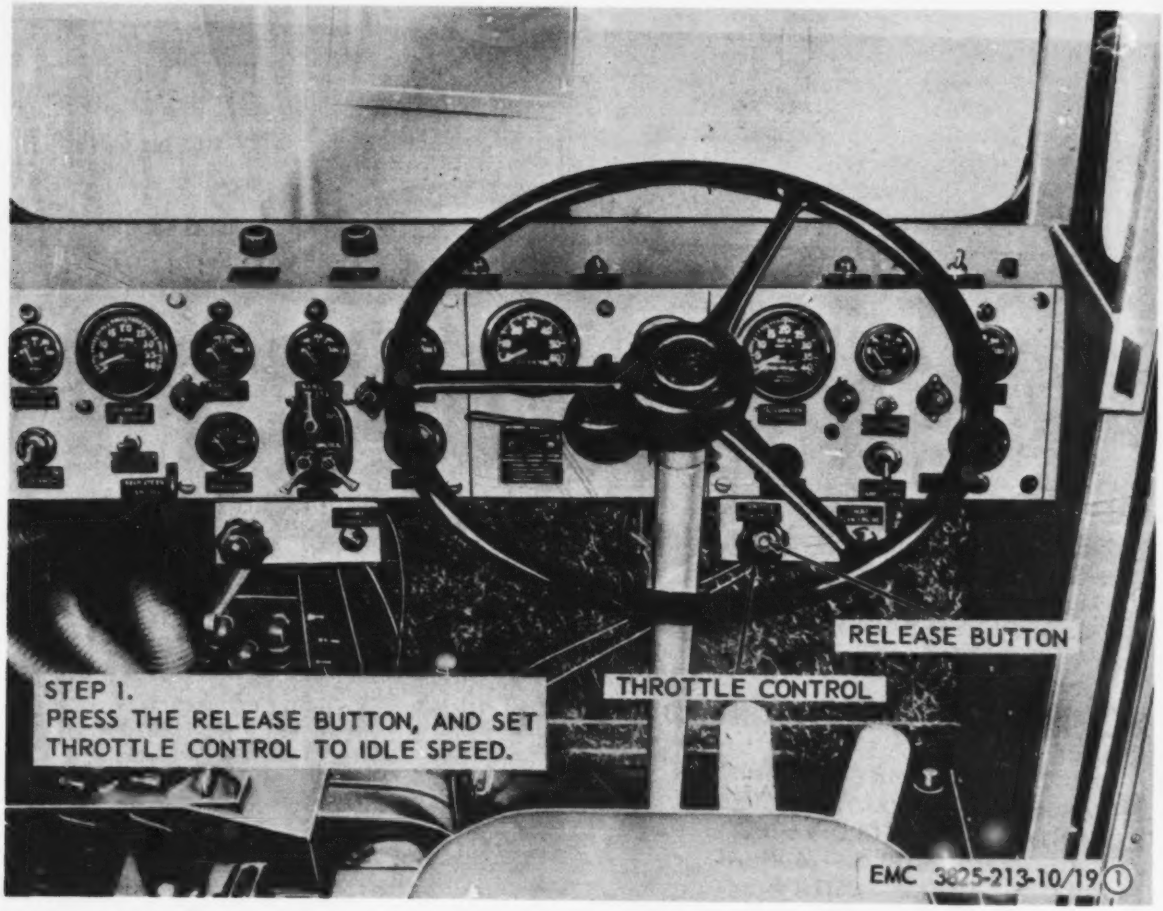
*Figure 18*—Continued.


THROTTLE CONTROL
RELEASE BUTTON

STEP 4.
PRESS RELEASE BUTTON AND SET THROTTLE CONTROL FOR FULL THROTTLE.

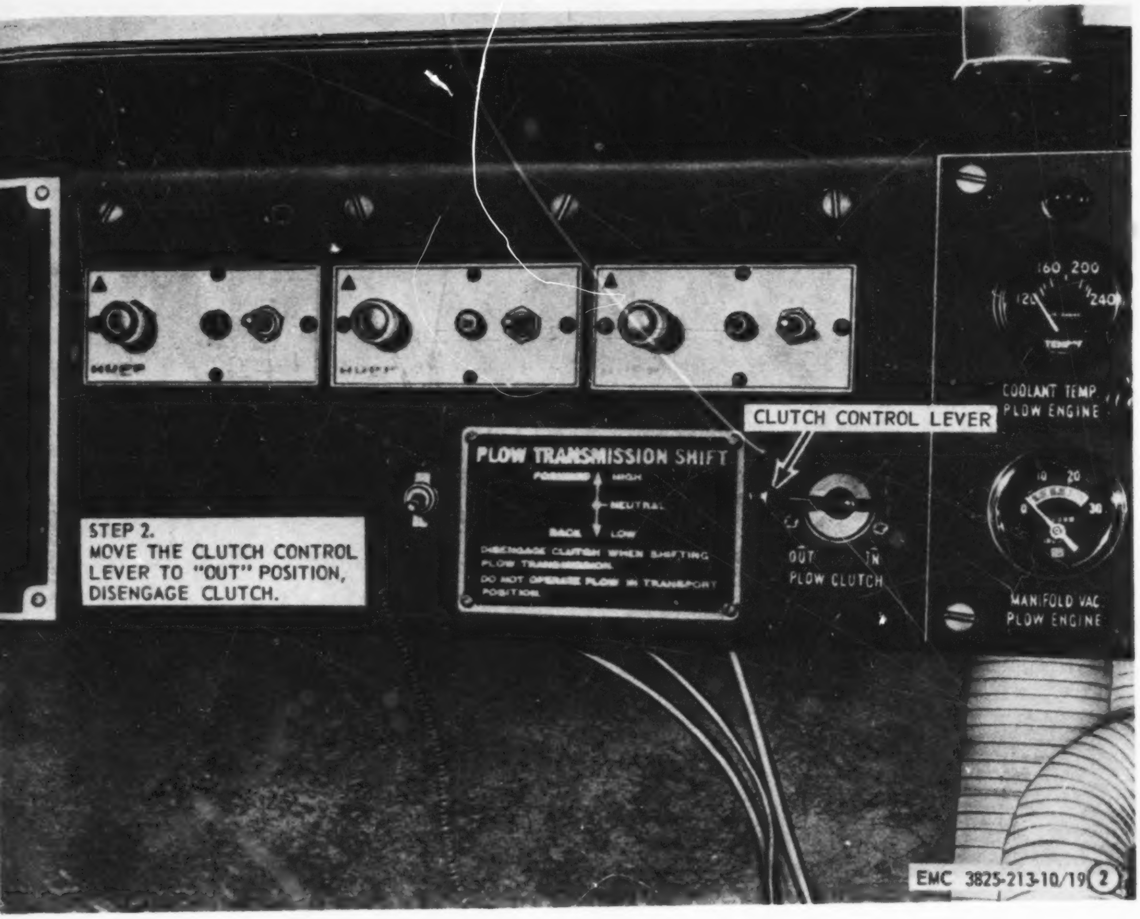
STEP 5.
USE THE NECESSARY TRANSMISSION RANGE AND TRAVEL RATE TO MAINTAIN A MANIFOLD VACUUM GAGE READING OF 3 – 6 IN. AT FULL THROTTLE POSITION.

EMC 3825-213-10/18 ③



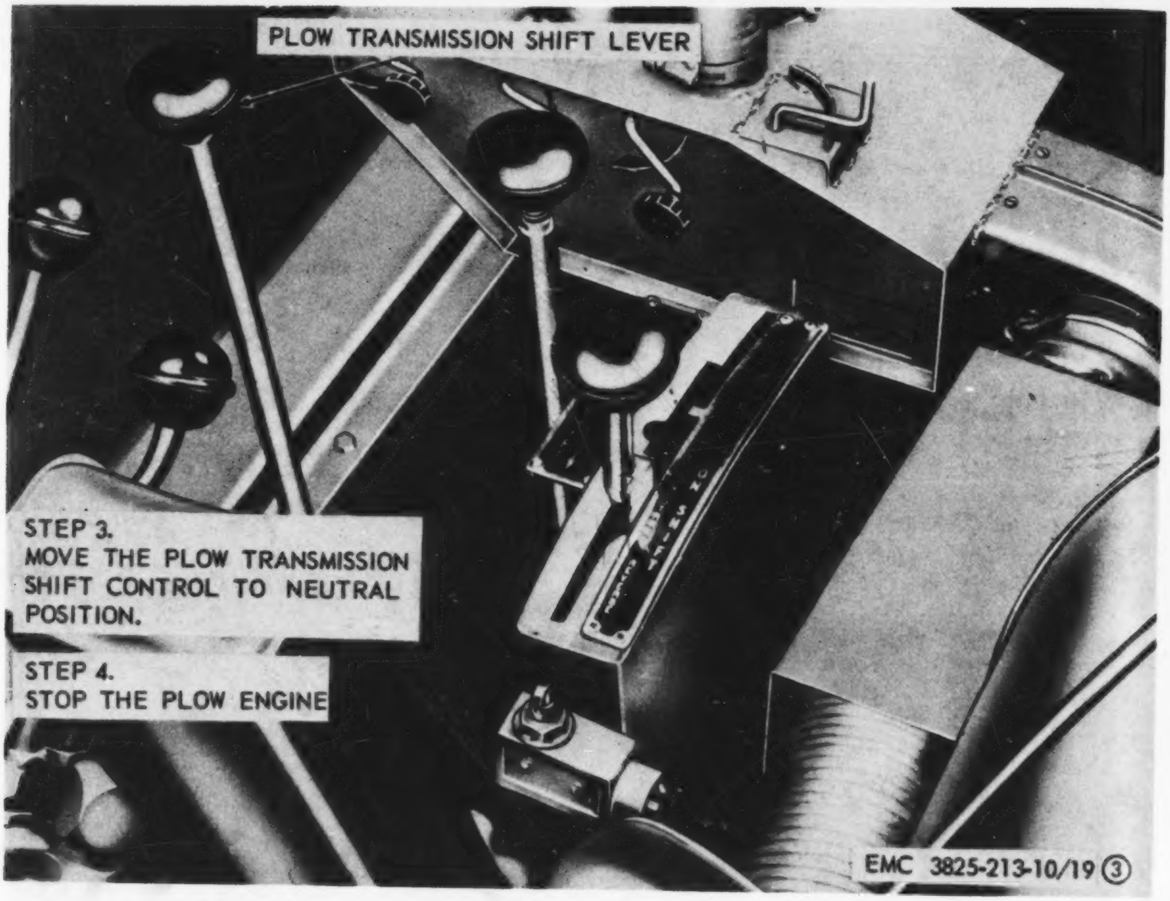
RELEASE BUTTON
THROTTLE CONTROL
STEP 1.
PRESS THE RELEASE BUTTON, AND SET THROTTLE CONTROL TO IDLE SPEED.
EMC 3825-213-10/19①

*Figure 19. Stopping plow.*


CLUTCH CONTROL LEVER
PLOW TRANSMISSION SHIFT
FORWARD
HIGH
NEUTRAL
BACK
LOW
DISENGAGE CLUTCH WHEN SHIFTING PLOW TRANSMISSION
DO NOT OPERATE PLOW IN TRANSPORT POSITION
OUT
IN
PLOW CLUTCH
COOLANT TEMP.
PLOW ENGINE
MANIFOLD VAC
PLOW ENGINE
EMC 3825-213-10/19 ②

STEP 2.
MOVE THE CLUTCH CONTROL LEVER TO "OUT" POSITION, DISENGAGE CLUTCH.

*Figure 19*—Continued.


PLOW TRANSMISSION SHIFT LEVER
EMC 3825-213-10/19 ③

STEP 3.
MOVE THE PLOW TRANSMISSION SHIFT CONTROL TO NEUTRAL POSITION.

STEP 4.
STOP THE PLOW ENGINE

*Figure 19*—Continued.

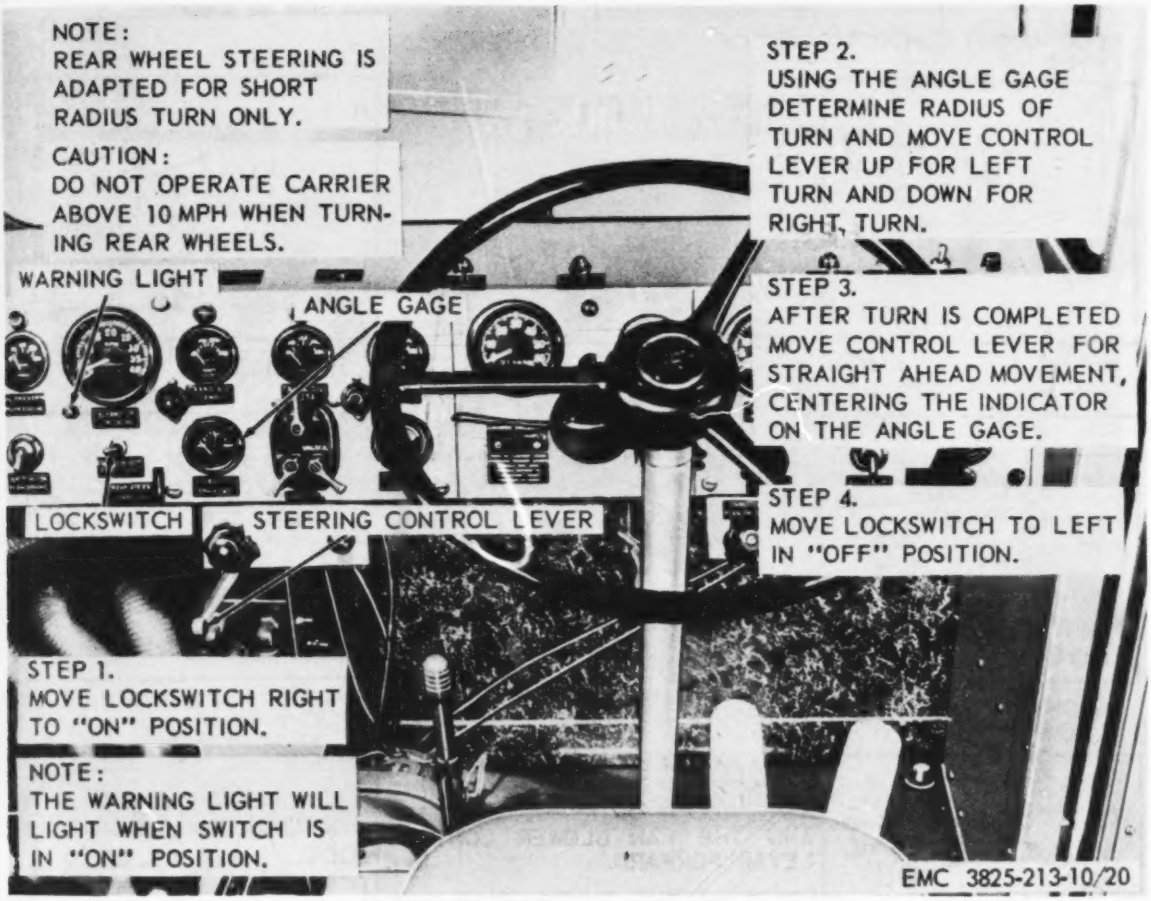
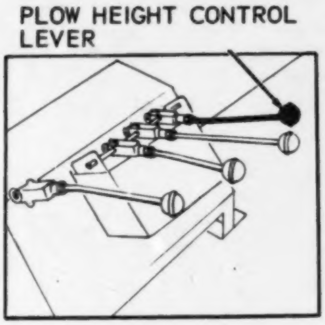
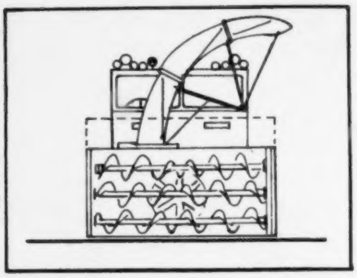

NOTE:
REAR WHEEL STEERING IS ADAPTED FOR SHORT RADIUS TURN ONLY.
CAUTION:
DO NOT OPERATE CARRIER ABOVE 10 MPH WHEN TURNING REAR WHEELS.
WARNING LIGHT
ANGLE GAGE
LOCKSWITCH
STEERING CONTROL LEVER
STEP 1.
MOVE LOCKSWITCH RIGHT TO "ON" POSITION.
NOTE:
THE WARNING LIGHT WILL LIGHT WHEN SWITCH IS IN "ON" POSITION.
STEP 2.
USING THE ANGLE GAGE DETERMINE RADIUS OF TURN AND MOVE CONTROL LEVER UP FOR LEFT TURN AND DOWN FOR RIGHT, TURN.
STEP 3.
AFTER TURN IS COMPLETED MOVE CONTROL LEVER FOR STRAIGHT AHEAD MOVEMENT, CENTERING THE INDICATOR ON THE ANGLE GAGE.
STEP 4.
MOVE LOCKSWITCH TO LEFT IN "OFF" POSITION.
EMC 3825-213-10/20

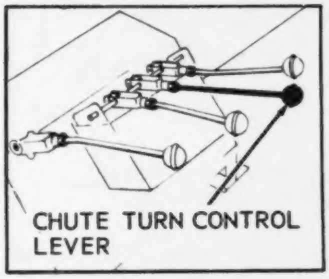
*Figure 20. Rear axle steering operation.*


PLOW HEIGHT CONTROL LEVER

RAISING THE PLOW. PUSH THE PLOW HEIGHT CONTROL LEVER FORWARD.

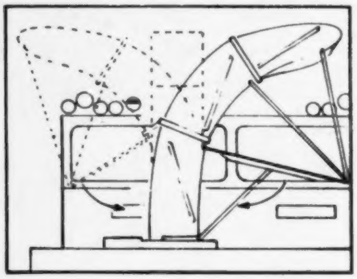
LOWERING THE PLOW. PULL THE PLOW HEIGHT CONTROL LEVER BACK.

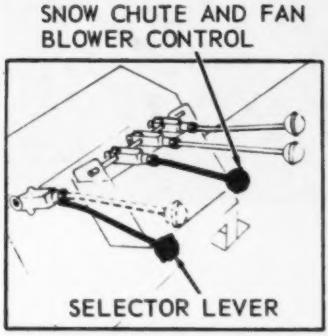



CHUTE TURN CONTROL LEVER

TURNING THE CHUTE RIGHT. PUSH THE CHUTE TURN CONTROL LEVER FORWARD.

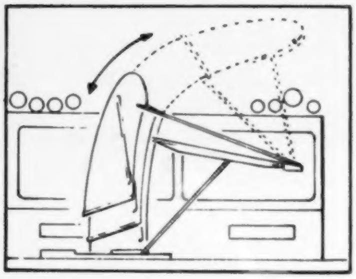
TURNING THE CHUTE LEFT. PULL THE CHUTE CONTROL LEVER BACK.



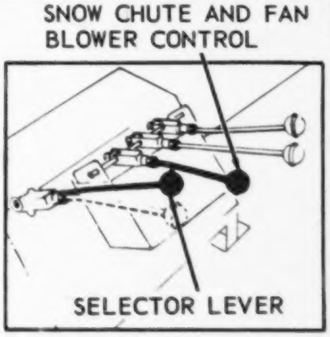

SNOW CHUTE AND FAN BLOWER CONTROL
SELECTOR LEVER

RAISING THE CHUTE. PUSH THE SELECTOR VALVE CONTROL LEVER FORWARD. PUSH THE SNOW CHUTE AND THE FAN BLOWER CONTROL LEVER FORWARD.

LOWERING THE CHUTE. PUSH THE SELECTOR VALVE CONTROL LEVER FORWARD. PULL THE SNOW CHUTE AND FAN BLOWER CONTROL LEVER BACK.

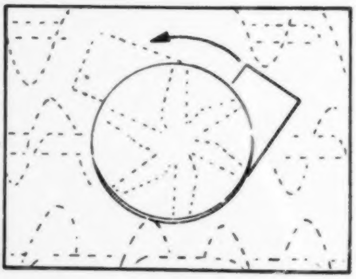


NOTE: RELEASE CHUTE SAFETY CATCH BEFORE LOWERING CHUTE.


SNOW CHUTE AND FAN BLOWER CONTROL
SELECTOR LEVER

TURNING THE FAN BLOWER RIGHT. PULL THE SELECTOR VALVE CONTROL LEVER BACK. PUSH THE SNOW CHUTE AND FAN BLOWER CONTROL LEVER FORWARD. TURNING THE FAN BLOWER LEFT. PULL THE SELECTOR VALVE CONTROL LEVER BACK. PULL THE SNOW CHUTE AND FAN BLOWER CONTROL LEVER BACK.

NOTE: DO NOT TURN FAN BLOWER LEFT OF CENTER WITH SNOW CHUTE INSTALLED.



EMC 3825-213-10/21

*Figure 21. Snow removal operation and controls in position.*

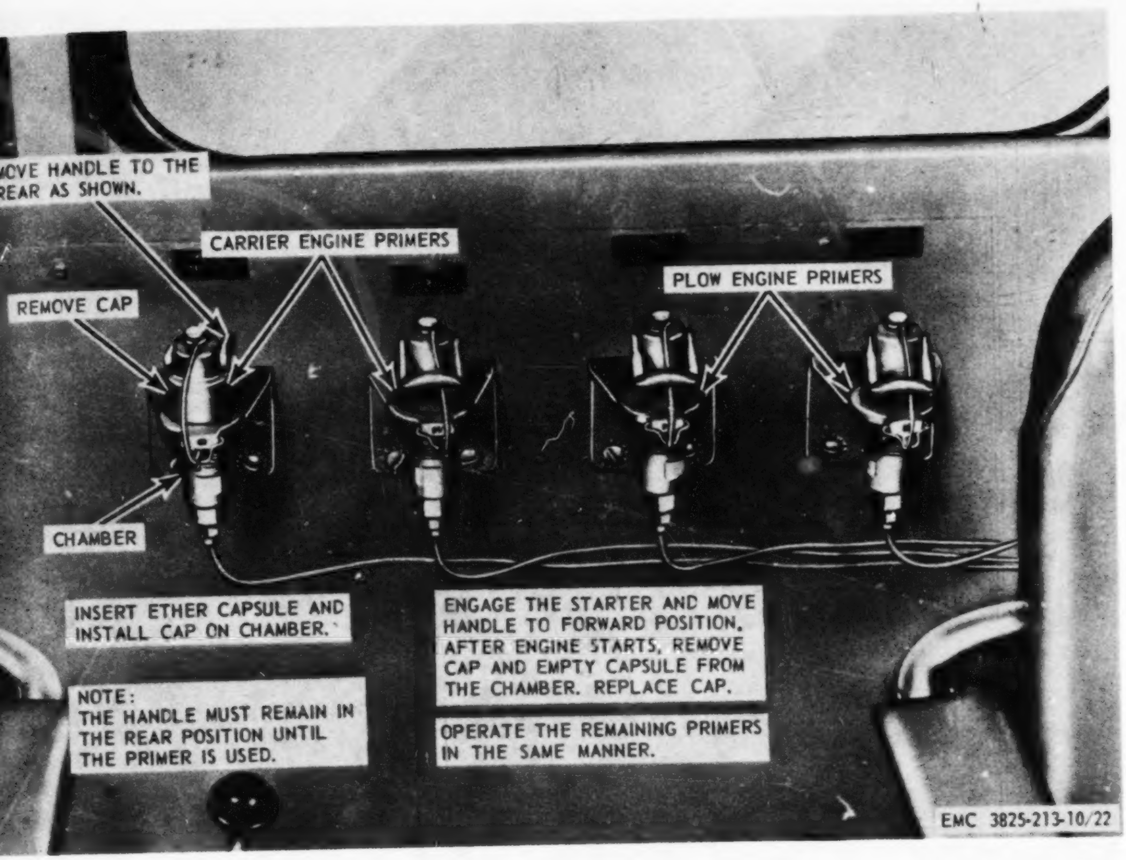
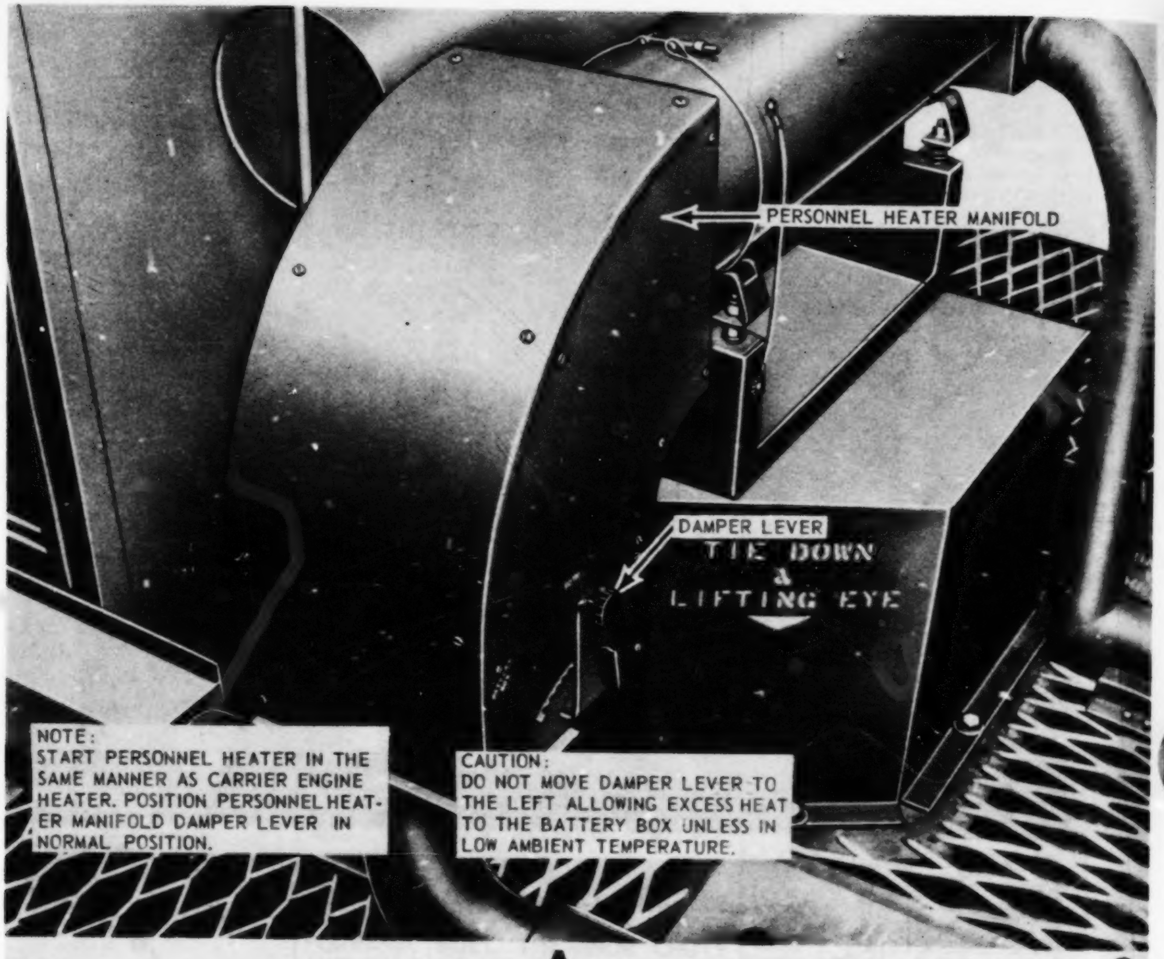

OVE HANDLE TO THE
EAR AS SHOWN.
CARRIER ENGINE PRIMERS
REMOVE CAP
PLOW ENGINE PRIMERS
CHAMBER
INSERT ETHER CAPSULE AND INSTALL CAP ON CHAMBER.
ENGAGE THE STARTER AND MOVE HANDLE TO FORWARD POSITION. AFTER ENGINE STARTS, REMOVE CAP AND EMPTY CAPSULE FROM THE CHAMBER. REPLACE CAP.
NOTE:
THE HANDLE MUST REMAIN IN THE REAR POSITION UNTIL THE PRIMER IS USED.
OPERATE THE REMAINING PRIMERS IN THE SAME MANNER.
EMC 3825-213-10/22

*Figure 22. Carrier and plow engines starting aids.*


PERSONNEL HEATER MANIFOLD
DAMPER LEVER
TIE DOWN & LIFTING EYE
A

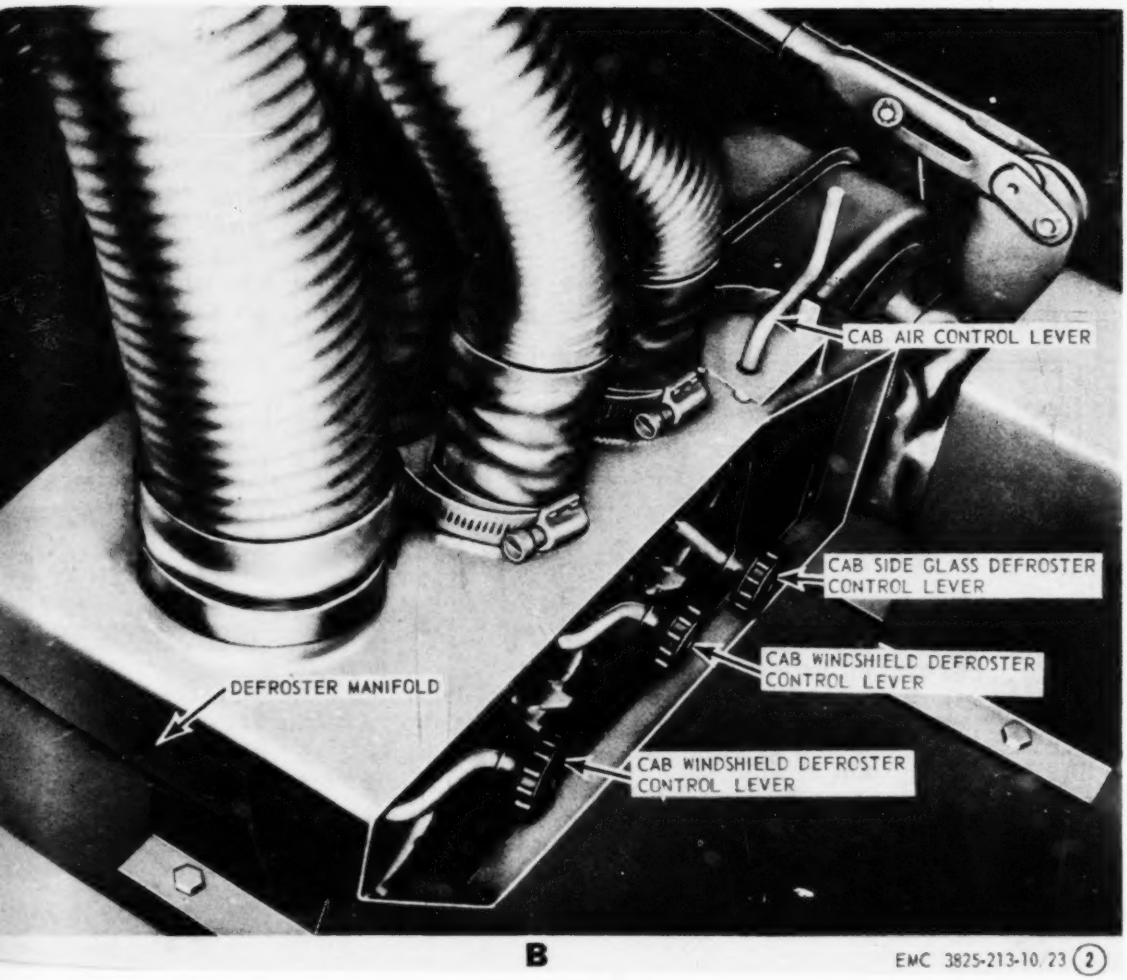
NOTE:
START PERSONNEL HEATER IN THE SAME MANNER AS CARRIER ENGINE HEATER. POSITION PERSONNEL HEATER MANIFOLD DAMPER LEVER IN NORMAL POSITION.

CAUTION:
DO NOT MOVE DAMPER LEVER TO THE LEFT ALLOWING EXCESS HEAT TO THE BATTERY BOX UNLESS IN LOW AMBIENT TEMPERATURE.

EMC 3825-213-10/23 ①

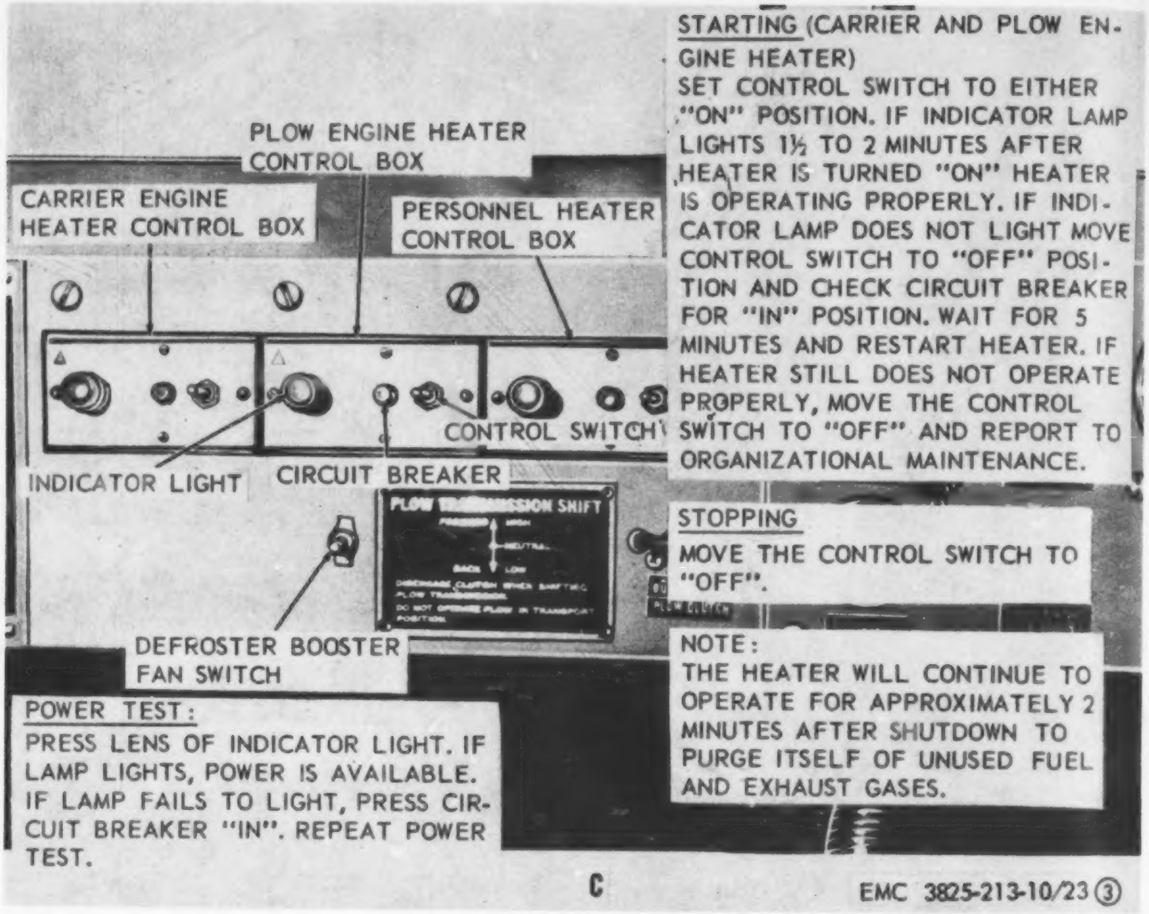
**A. Personnel heater manifold control**

*Figure 23. Carrier and plow engine and personnel heaters.*


CAB AIR CONTROL LEVER
CAB SIDE GLASS DEFROSTER CONTROL LEVER
CAB WINDSHIELD DEFROSTER CONTROL LEVER
DEFROSTER MANIFOLD
CAB WINDSHIELD DEFROSTER CONTROL LEVER
B
EMC 3825-213-10/23 (2)

**B. Defroster manifold controls**

*Figure 23*—Continued.


PLOW ENGINE HEATER CONTROL BOX
CARRIER ENGINE HEATER CONTROL BOX
PERSONNEL HEATER CONTROL BOX
CONTROL SWITCH
INDICATOR LIGHT
CIRCUIT BREAKER
DEFROSTER BOOSTER FAN SWITCH
C
EMC 3825-213-10/23 ③

STARTING (CARRIER AND PLOW ENGINE HEATER)

SET CONTROL SWITCH TO EITHER "ON" POSITION. IF INDICATOR LAMP LIGHTS 1½ TO 2 MINUTES AFTER HEATER IS TURNED "ON" HEATER IS OPERATING PROPERLY. IF INDICATOR LAMP DOES NOT LIGHT MOVE CONTROL SWITCH TO "OFF" POSITION AND CHECK CIRCUIT BREAKER FOR "IN" POSITION. WAIT FOR 5 MINUTES AND RESTART HEATER. IF HEATER STILL DOES NOT OPERATE PROPERLY, MOVE THE CONTROL SWITCH TO "OFF" AND REPORT TO ORGANIZATIONAL MAINTENANCE.

STOPPING

MOVE THE CONTROL SWITCH TO "OFF".

NOTE:

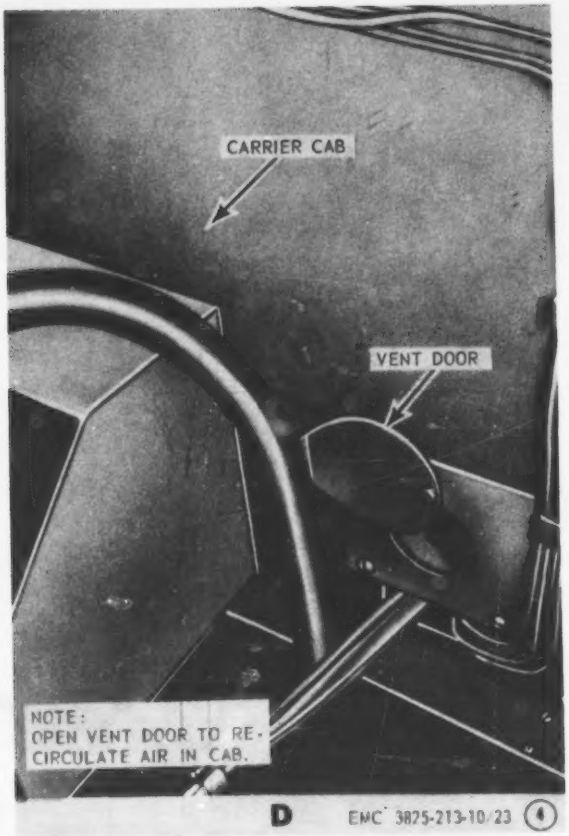
THE HEATER WILL CONTINUE TO OPERATE FOR APPROXIMATELY 2 MINUTES AFTER SHUTDOWN TO PURGE ITSELF OF UNUSED FUEL AND EXHAUST GASES.

POWER TEST:

PRESS LENS OF INDICATOR LIGHT. IF LAMP LIGHTS, POWER IS AVAILABLE. IF LAMP FAILS TO LIGHT, PRESS CIRCUIT BREAKER "IN". REPEAT POWER TEST.

C. **Heater controls**

*Figure 23*—Continued.


CARRIER CAB
VENT DOOR
D
EMC 3825-213-10/23 ④

NOTE:
OPEN VENT DOOR TO RECIRCULATE AIR IN CAB.

D. Carrier cab air recirculating vent door

*Figure 23*—Continued.

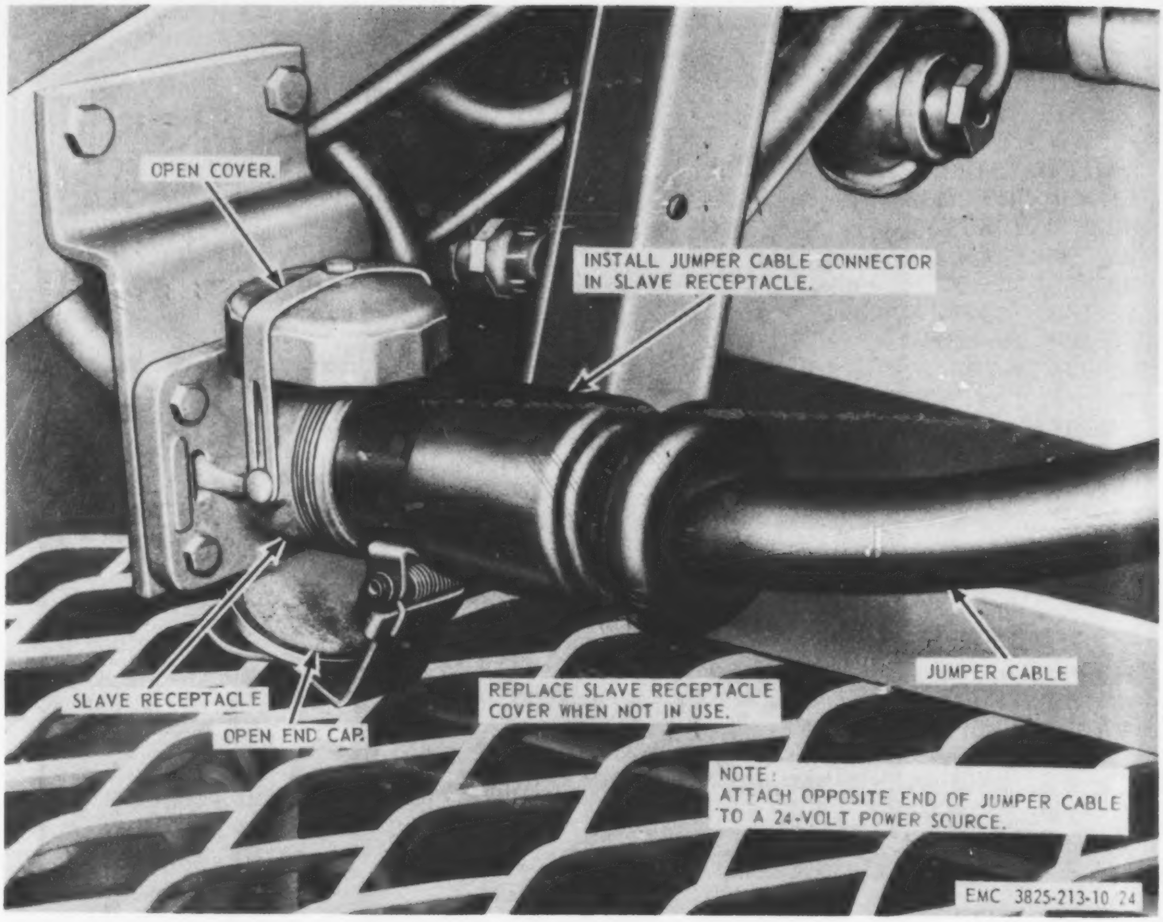

OPEN COVER.
INSTALL JUMPER CABLE CONNECTOR IN SLAVE RECEPTACLE.
SLAVE RECEPTACLE
OPEN END CAP.
REPLACE SLAVE RECEPTACLE COVER WHEN NOT IN USE.
JUMPER CABLE
NOTE:
ATTACH OPPOSITE END OF JUMPER CABLE TO A 24-VOLT POWER SOURCE.
EMC 3825-213-10 24

*Figure 24. Slave receptacle operation.*

# CHAPTER 3

# MAINTENANCE INSTRUCTIONS

## Section I. OPERATOR'S TOOLS AND EQUIPMENT

### 35. Special Tools and Equipment

No special tools or equipment are required by the operator for the maintenance of this snow removal unit.

### 36. Basic Issue Tools and Equipment

Tools and repair parts issued with or authorized for the snow removal unit are listed in appendix II.

## Section II. LUBRICATION

### 37. General Lubrication Information

*a.* This section contains a reproduction of the lubrication order (LO 5-3825-213-20) and lubrication instructions which are supplemental to, and not specifically covered in the lubrication order.

*b.* The lubrication order shown in figure 25 is an exact reproduction of the approved lubrication order for the snow removal unit. For the current lubrication order, always refer to DA Pam 310-4.

### 38. Detailed Lubrication Information

*a. Care of Lubricants.* Replace covers on lubricant containers after use and store in a clean dry place. Keep all containers used in handling lubricating oil or gasoline clean and ready for use.

*b. Cleaning.* Use an approved cleaning solvent to clean all surfaces surrounding the point of application before applying the lubricant.

*c. Points of Application.* Follow the detailed lubrication instructions given beneath each illustrated lubrication instruction point. Always apply the lubricant specified on the current lubrication order (LO 5-3825-213-20).

***Caution*: Overlubrication may cause equipment failure or damage to working parts.**

*d. Oil Filter Assemblies Service.* Service oil filter assemblies as illustrated in figure 26.

*e. Carrier and Plow Engine Crankcase Breather Service.* Service crankcase breather as illustrated in figure 27.

*f. Torqmatic Transmission and Torque Converter Service.* Service transmission and torque converter as illustrated in figure 28.

*g. Carrier and Plow Engine Crankcase Ventilation Service.* Service carrier and plow engine crankcase ventilation as illustrated in figure 29.

**LUBRICATION ORDER**

# LO 5-3825-213-20-1

25 OCTOBER 1961 (SUPERSEDES LO 5-3825-213-20, 27 JULY 1961)

## SNOW REMOVAL UNIT, SELF-PROPELLED: GASOLINE DRIVEN; ROTARY; WHEEL MTD; WINTERIZED (FWD MODEL S-349-V) W/TWO ENGINES WAUKESHA MODEL TH884

Reference: LO 5-3825-213-20-2 and 3, SM 10-1-C4-1

Intervals are based on normal hours of operations. Reduce to compensate for abnormal operations and severe conditions. During inactive periods sufficient lubrication must be performed for adequate preservation.

Clean fittings before lubricating.

Relubricate after washing or fording.

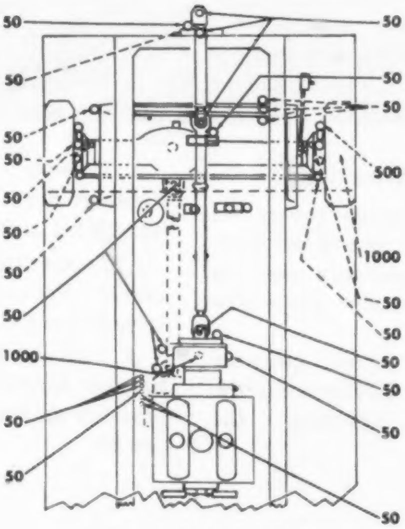
Clean parts with SOLVENT, dry-cleaning, or with OIL, fuel, Diesel. Dry before lubricating.

Lubricate points indicated by dotted arrow shafts on both sides of equipment.

Drain gearcases when hot. Fill and check level.

FOLD

| | | LUBRICANT | INTERVAL |
|---|---|---|---|
| ① | Plow Hydraulic Cylinder Ram | GAA | 50 |
| ② | Plow Vertical Guide Rail (Clean and coat.) | GAA | 50 |
| ③ | Spring Hanger | GAA | 50 |
| ④ | Brake Camshaft | GAA | 50 |
| ⑤ | Axle Bearing | GAA | 50 |
| ⑥ | Axle Ball Pivot (Upper and lower.) | GAA | 50 |
| ⑦ | Spring Shackle (2 fittings.) | GAA | 50 |
| ⑧ | Main Drive Universal Joints and Spline | GAA | 50 |
| ⑨ | Plow Transmission Drain (Drain and refill.) | | 1000 |
| ⑩ | Plow Transmission Shaft Bearings | GAA | 50 |
| ⑪ | Clutch Throwout Bearing (Sparingly) | GAA | 50 |



| INTERVAL | LUBRICANT | | |
|---|---|---|---|
| 50 | GAA | Plow Universal Joints and Spline | ⑫ |
| 50 | GAA | Pillow Block Bearing | ⑬ |
| 50 | GAA | Control Lever Shaft Bearings | ⑭ |
| 500 | GAA | Slack Adjuster (Remove plug, install fitting, lubricate, and re-install plug.) | ⑮ |
| 1000 | GAA | Wheel Bearings (See Note 3.) | ⑯ |
| 50 | GAA | Axle Ball Joint | ⑰ |
| 50 | GAA | Tie Rod End | ⑱ |
| 50 | GAA | Plow Universal Joint | ⑲ |
| 50 | GAA | Plow Transmission Shift Pivot | ⑳ |
| 50 | GO | Plow Transmission Fill and Level (See Key.) (Check level.) | (21) |
| 50 | GAA | Clutch Release Shaft | (22) |

FOLD

PLAN VIEW FRONT SECTION

CONTINUED ON FOLLOWING PAGE

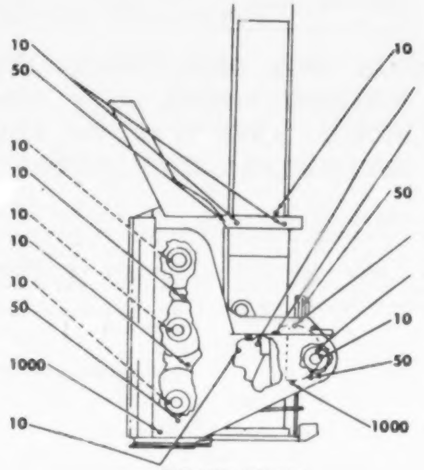
EMC 3825-213-10/25 ①

Front LO 5–3825–213–20–1

*Figure 25. Lubrication order.*

CONTINUED FROM PRECEDING PAGE

| | | LUBRICANT | INTERVAL |
|---|---|---|---|
| (23) | Chute Turret | GAA | 10 |
| (24) | Turret Drive Chain (Remove cover for access.) (Clean and coat.) | OE | 50 |
| (25) | Auger Bearing | GAA | 10 |
| (26) | Upper Stationary Idler Bearing | GAA | 10 |
| (27) | Auger Bearing | GAA | 10 |
| (28) | Lower Stationary Idler Bearing | GAA | 10 |
| (29) | Auger Bearing | GAA | 10 |
| (30) | Auger Drive Chain Case Level (Check level.) | | 50 |
| (31) | Auger Drive Chain Case Drain (Drain and refill.) | | 1000 |
| (32) | Adjustable Idler Bearing | GAA | 10 |



END VIEW ROTARY SNOW REMOVAL UNIT

| INTERVAL | LUBRICANT | | |
|---|---|---|---|
| 10 | GAA | Chute Turret Gearcase | (33) |
| | GAA | Fan Hub (See Note 4.) | (34) |
| | GO | Auger Drive Chain Case Fill (See Key.) | (35) |
| 50 | GAA | Directional Guide Rail (Clean and Coat.) | (36) |
| | GO | Fan Gearcase Fill (See Key.) | (37) |
| | GAA | Shear Coupling (See Note 4.) | (38) |
| 10 | GAA | Auger Drive Bearing | (39) |
| 50 | | Fan Gearcase Level (Check level.) | (40) |
| 1000 | | Fan Gearcase Drain (Drain and refill.) | (41) |

— KEY —

| LUBRICANTS | CAPACITY | EXPECTED TEMPERATURES | | | INTERVALS |
|---|---|---|---|---|---|
| | | Above +32°F | +40°F to -10°F | 0°F to -65°F | |
| OE –OIL, Engine, Heavy Duty | | OE 30 or 9250 | OE 10 or 9110 | OES | Intervals given are in hours of normal operation. |
| Oil Can Points | | | | | |
| OES –OIL, Engine, Sub-zero | | | | | |
| GO – LUBRICATING OIL, Gear | | GO 90 . | GO 90 | GOS | |
| Plow Transmission | 8qt | | | | |
| Fan Gearcase | 2qt | | | | |
| Auger Drive Chaincase | 1qt | GO 90 | GO 80 | GOS | |
| GOS – LUBRICATING OIL, Gear, Sub-zero | | | | | |
| GAA – GREASE, Automotive and Artillery | | All Temperatures | | | |

NOTES:

1. FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW -10°F. Remove lubricants prescribed in the key for temperatures above -10°F. Clean parts with SOLVENT, dry-cleaning. Relubricate with lubricants specified in the key for temperatures below -10°F.

2. OIL CAN POINTS. Every 50 hours lubricate linkage, pins and clevises, door hinges, and all exposed adjusting threads with OE.

3. WHEEL BEARINGS. Every 1000 hours remove wheels, clean and inspect all parts, replace damaged or worn parts, repack bearings, and reassemble.

4. SHEAR COUPLING AND FAN HUB. Lubricate according to frequency that shear bolts break.

Copy of this Lubrication Order will remain with the equipment at all times; instructions contained herein are mandatory.

**By Order of the Secretary of the Army:**

**G. H. DECKER,**
***General, United States Army,***
***Chief of Staff.***

**Official:**

**J. C. LAMBERT,**
***Major General, United States Army,***
***The Adjutant General.***

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Back LO 5-3825-213-20-1

*Figure 25*—Continued.

**LUBRICATION ORDER**

# LO 5-3825-213-20-2

25 OCTOBER 1961 (SUPERSEDES LO 5-3825-213-20, 27 JULY 1961)

## SNOW REMOVAL UNIT, SELF-PROPELLED: GASOLINE DRIVEN; ROTARY; WHEEL MTD; WINTERIZED (FWD MODEL S-349-V) W/TWO ENGINES WAUKESHA MODEL TH884

Reference: LO 5-3825-213-20-1 and 3, SM 10-1-C4-1

Intervals are based on normal hours of operations. Reduce to compensate for abnormal operations and severe conditions. During inactive periods sufficient lubrication must be performed for adequate preservation.

Clean fittings before lubricating.

Relubricate after washing or fording.

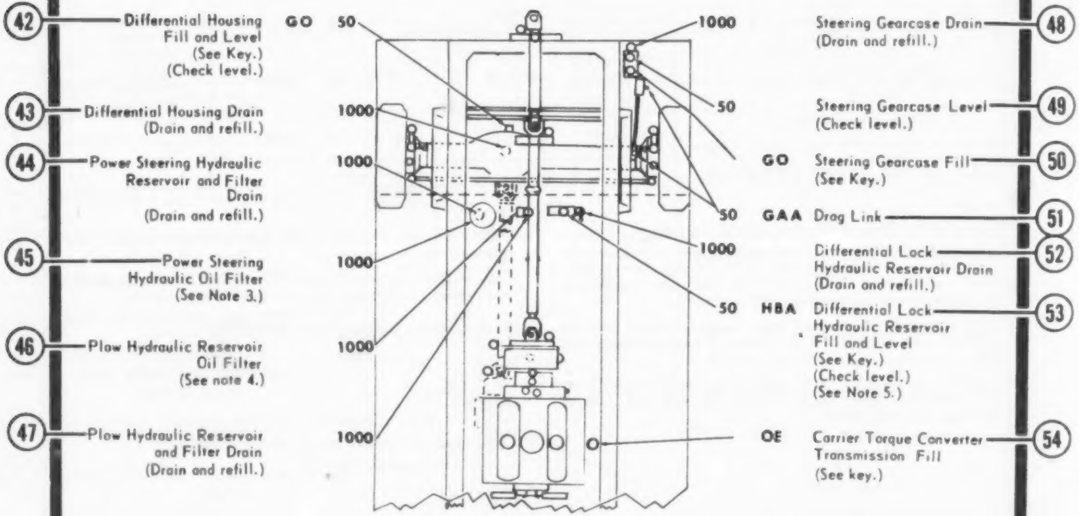
Clean parts with SOLVENT, dry-cleaning, or with OIL, fuel, Diesel. Dry before lubricating.

Lubricate points indicated by dotted arrow shafts on both sides of equipment.

Drain gearcases when hot. Fill and check level.

LUBRICANT • INTERVAL

INTERVAL • LUBRICANT


FOLD
FOLD
(42) Differential Housing Fill and Level (See Key.) (Check level.) GO 50
(43) Differential Housing Drain (Drain and refill.) 1000
(44) Power Steering Hydraulic Reservoir and Filter Drain (Drain and refill.) 1000
(45) Power Steering Hydraulic Oil Filter (See Note 3.) 1000
(46) Plow Hydraulic Reservoir Oil Filter (See note 4.) 1000
(47) Plow Hydraulic Reservoir and Filter Drain (Drain and refill.) 1000
1000 Steering Gearcase Drain (Drain and refill.) (48)
50 Steering Gearcase Level (Check level.) (49)
GO Steering Gearcase Fill (See Key.) (50)
50 GAA Drag Link (51)
1000 Differential Lock Hydraulic Reservoir Drain (Drain and refill.) (52)
50 HBA Differential Lock Hydraulic Reservoir Fill and Level (See Key.) (Check level.) (See Note 5.) (53)
OE Carrier Torque Converter Transmission Fill (See key.) (54)

PLAN VIEW FRONT SECTION

CONTINUED ON FOLLOWING PAGE

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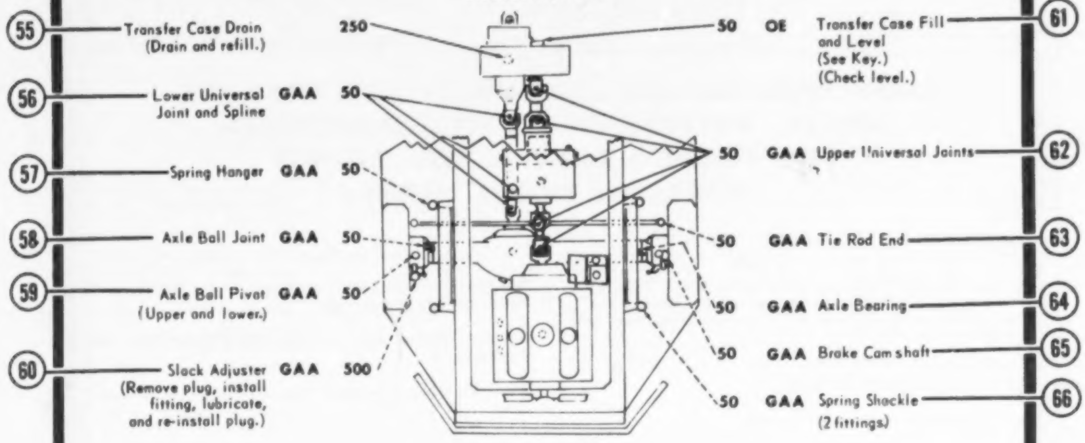
Front LO 5-3825-213-20-2

*Figure 25*—Continued.

**LUBRICANT • INTERVAL** CONTINUED FROM PRECEDING PAGE **INTERVAL • LUBRICANT**


(55) Transfer Case Drain (Drain and refill.) 250
(56) Lower Universal Joint and Spline GAA 50
(57) Spring Hanger GAA 50
(58) Axle Ball Joint GAA 50
(59) Axle Ball Pivot (Upper and lower.) GAA 50
(60) Slack Adjuster (Remove plug, install fitting, lubricate, and re-install plug.) GAA 500
(a)
50 OE Transfer Case Fill and Level (See Key.) (Check level.) (61)
50 GAA Upper Universal Joints (62)
50 GAA Tie Rod End (63)
50 GAA Axle Bearing (64)
50 GAA Brake Cam shaft (65)
50 GAA Spring Shackle (2 fittings) (66)

PLAN VIEW REAR SECTION

— KEY —

| LUBRICANTS | CAPACITY | EXPECTED TEMPERATURES | | | INTERVALS |
|---|---|---|---|---|---|
| | | Above +32°F | +40°F to -10°F | 0°F to -65°F | |
| **OE** – OIL, Engine, Heavy Duty | | OE 10 | OE 10 | OES | Intervals given are in hours of normal operation |
| Carrier Torque Converter and Transmission | 49 qt | | | | |
| Transfer Case | 5½ qt | OE 30 | OE 30 | OES | |
| Oil Can Points | | OE 30 or 9250 | OE 10 or 9110 | OES | |
| **OES** – OIL, Engine, Sub-zero | | | | | |
| **GO** – LUBRICATING, OIL, Gear | | | | | |
| Steering Gearcase | 1 qt | GO 90 * | GO 90 | GOS | |
| Differential Housing | 7½ qt | | | | |
| **GOS** – LUBRICATING OIL, Gear, Sub-zero | | | | | |
| **HBA** – HYDRAULIC FLUID, Nonpetroleum | | All Temperatures | | | |
| Differential Lock Reservoir | ¼ qt | | | | |
| **GAA** – GREASE, Automotive and Artillery | | | | | |

NOTES:

1. FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW -10°F. Remove lubricants prescribed in the key for temperatures above -10°F. Clean parts with SOLVENT, dry-cleaning. Relubricate with lubricants specified in the key for temperatures below -10°F.

2. OIL CAN POINTS. Every 50 hours lubricate linkage, pins and clevises, door hinges, and all exposed adjusting threads with OE.

3. POWER STEERING OIL FILTER. Every 1000 hours remove filter element, clean housing, and install new element. Operate engine five minutes, check for leaks, check level, and bring to full mark.

4. PLOW HYDRAULIC OIL FILTERS. Every 1000 hours remove filter assembly from frame, remove element and clean. Clean housing, replace element in housing, and re-install assembly.

5. DIFFERENTIAL LOCK HYDRAULIC RESERVOIR. Maintain fluid level one inch from top of reservoir.

Copy of this Lubrication Order will remain with the equipment at all times; instructions contained herein are mandatory.

**By Order of the Secretary of the Army:**

**G. H. DECKER,**
***General, United States Army,***
***Chief of Staff.***

**Official:**
**J. C. LAMBERT,**
***Major General, United States Army,***
***The Adjutant General.***

EMC 3825-213-10/25 ④

Back LO 5-3825-213-20-2

*Figure 25*—Continued.

**LUBRICATION ORDER**

# LO 5-3825-213-20-3

25 OCTOBER 1961 (SUPERSEDES LO 5-3825-213-20, 27 JULY 1961)

## SNOW REMOVAL UNIT, SELF-PROPELLED: GASOLINE DRIVEN; ROTARY; WHEEL MTD; WINTERIZED (FWD MODEL S-349-V) W/TWO ENGINES WAUKESHA MODEL TH884

Reference: LO 5-3825-213-20-1 and 2, SM 10-1-C4-1

Intervals are based on normal hours of operations. Reduce to compensate for abnormal operations and severe conditions. During inactive periods sufficient lubrication must be performed for adequate preservation.

Clean fittings before lubricating.

Relubricate after washing or fording.

Clean parts with SOLVENT, dry-cleaning, or with OIL, fuel, Diesel. Dry before lubricating.

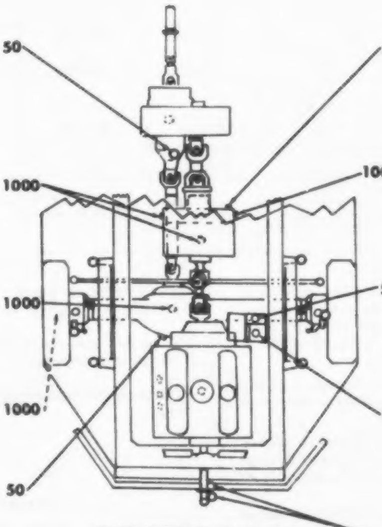
Lubricate points indicated by dotted arrow shafts on both sides of equipment.

Drain crankcase and gearcases when hot. Fill and check level.

FOLD

FOLD

| | | LUBRICANT | INTERVAL |
|---|---|---|---|
| (67) | Speedometer Drive (Remove cover, clean and coat gears.) | GAA | 50 |
| (68) | Carrier Torque Converter and Transmission Drain (Remove plug and oil line to drain.) (Drain and refill.) | | 1000 |
| (69) | Differential Housing Drain (Drain and refill.) | | 1000 |
| (70) | Wheel Bearings (See Note 7.) | GAA | 1000 |
| (71) | Differential Housing Fill and Level (See Key.) (Check level.) | GO | 50 |



PLAN VIEW REAR SECTION

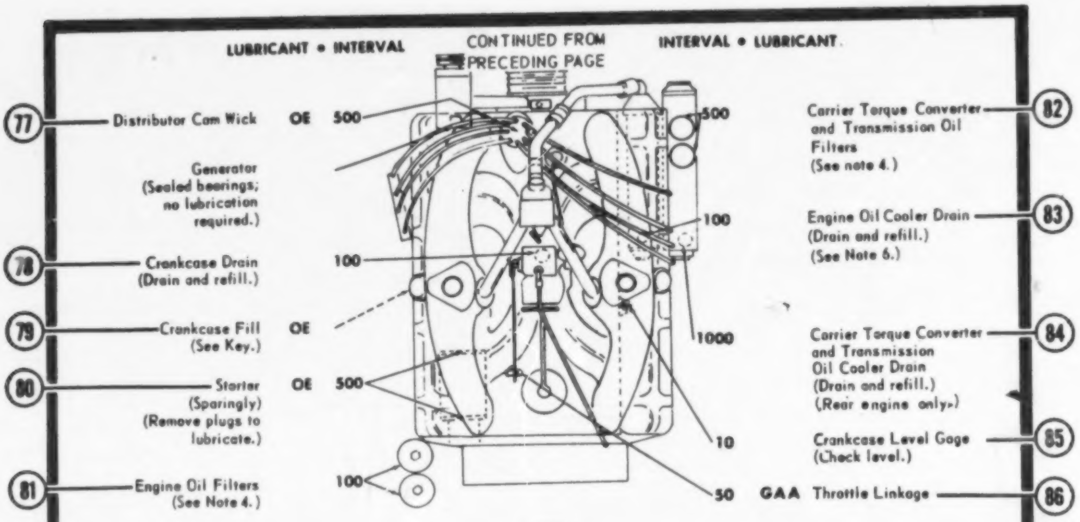
| INTERVAL | LUBRICANT | | |
|---|---|---|---|
| 50 | | Carrier Torque Converter and Transmission Level (Check level.) (See note 5.) | (72) |
| 1000 | | Torque Converter and Transmission Screen (Remove, clean, and reinstall.) | (73) |
| 50 | OHA | Plow Hydraulic Reservoir Fill and Level (See Key.) (Check level.) (See Note 3.) | (74) |
| 50 | OHA | Power Steering Hydraulic Reservoir Fill and Level (See Key.) (Check level.) (Level is 3 inches below fill opening.) | (75) |
| 50 | GAA | Pintle Hook | (76) |

CONTINUED ON FOLLOWING PAGE

EMC 3825-213-10/25 (5)

Front LO 5-3825-213-20-3

*Figure 25*—Continued.


LUBRICANT • INTERVAL
CONTINUED FROM PRECEDING PAGE
INTERVAL • LUBRICANT
77
Distributor Cam Wick OE 500
Generator (Sealed bearings; no lubrication required.)
78
Crankcase Drain (Drain and refill.) 100
79
Crankcase Fill OE (See Key.)
80
Starter OE 500 (Sparingly) (Remove plugs to lubricate.)
81
Engine Oil Filters 100 (See Note 4.)
500 Carrier Torque Converter and Transmission Oil Filters (See note 4.)
82
100 Engine Oil Cooler Drain (Drain and refill.) (See Note 6.)
83
1000 Carrier Torque Converter and Transmission Oil Cooler Drain (Drain and refill.) (Rear engine only.)
84
10 Crankcase Level Gage (Check level.)
85
50 GAA Throttle Linkage
86

— KEY —

| LUBRICANTS | CAPACITY | EXPECTED TEMPERATURES | | | INTERVALS |
|---|---|---|---|---|---|
| | | Above +32°F | +40°F to -10°F | 0°F to -65°F | |
| OE–OIL, Engine, Heavy Duty | | OE 30<br>or<br>9250 | OE 10<br>or<br>9110 | OES | |
| Crankcase | 20 qt ea | | | | |
| Oil Can Points | | | | | |
| OES–OIL, Engine, Sub-zero | | | | | |
| GO–LUBRICATING OIL, Gear | | GO 90 | GO 90 | GOS | Intervals given are in hours of normal operation |
| Differential Housing | 7½ qt | | | | |
| GOS–LUBRICATING OIL, Gear, Sub-zero | | | | | |
| OHA–HYDRAULIC FLUID, Petroleum | | All Temperatures | | | |
| Plow Hydraulic Reservoir | 34 qt | | | | |
| Power Steering Hydraulic | 9 qt | | | | |
| Reservoir | | | | | |
| GAA–GREASE, Automotive and Artillery | | | | | |

FOLD

FOLD

NOTES:

1. FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW -10°F. Remove lubricants prescribed in the key for temperatures above -10°F. Clean parts with SOLVENT, dry-cleaning. Relubricate with lubricants specified in the key for temperatures below -10°F.

2. OIL CAN POINTS. Every 50 hours, lubricate governor and throttle linkage pins, door hinges and all exposed adjusting threads with OE.

3. PLOW HYDRAULIC RESERVOIR. To check level, lower plow to ground, retract chute to shortest dimension. Maintain oil level three inches from top of reservoir.

4. CARRIER TORQUE CONVERTER, TRANSMISSION, AND ENGINE OIL FILTERS. Remove filter elements, clean housings, install new elements, fill reservoirs, operate engine for five minutes, check for leaks, check oil level, and bring to full mark.

5. CARRIER TORQUE CONVERTER AND TRANSMISSION LEVEL. Check level with carrier engine running and speed selector lever in neutral position.

6. CARRIER ENGINE OIL COOLER. To gain access to oil cooler, lower spare wheel, and remove winterization panel directly below carrier engine.

7. WHEEL BEARINGS. Every 1000 hours, remove wheels, clean and inspect all parts, replace damaged or worn parts, repack bearings, and reassemble.

Copy of this Lubrication Order will remain with the equipment at all times; instructions contained herein are mandatory.

**By Order of the Secretary of the Army:**

**G. H. DECKER,**
***General, United States Army,***
***Chief of Staff.***

**Official:**

**J. C. LAMBERT,**
***Major General, United States Army,***
***The Adjutant General.***

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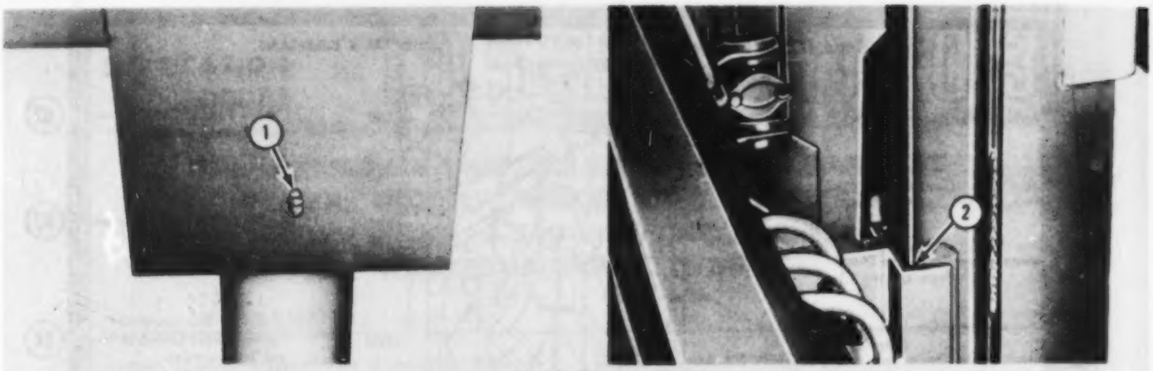
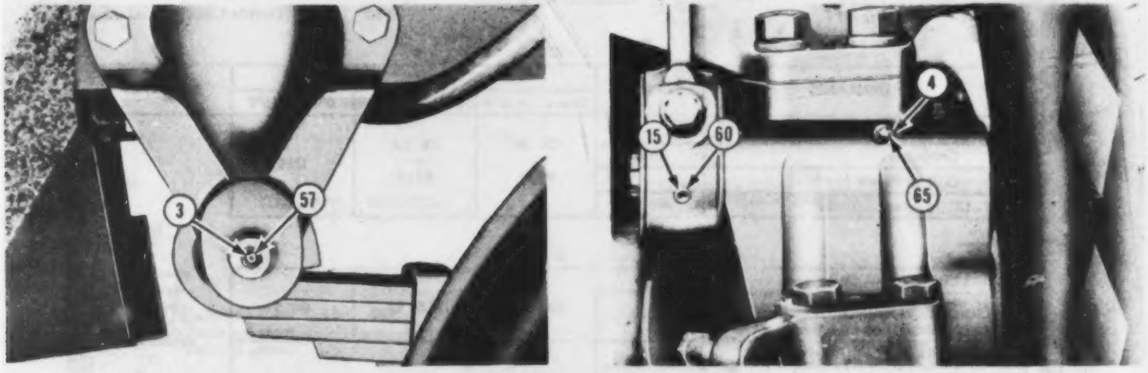
**Back LO 5-3825-213-20-3**

*Figure 25*—Continued.



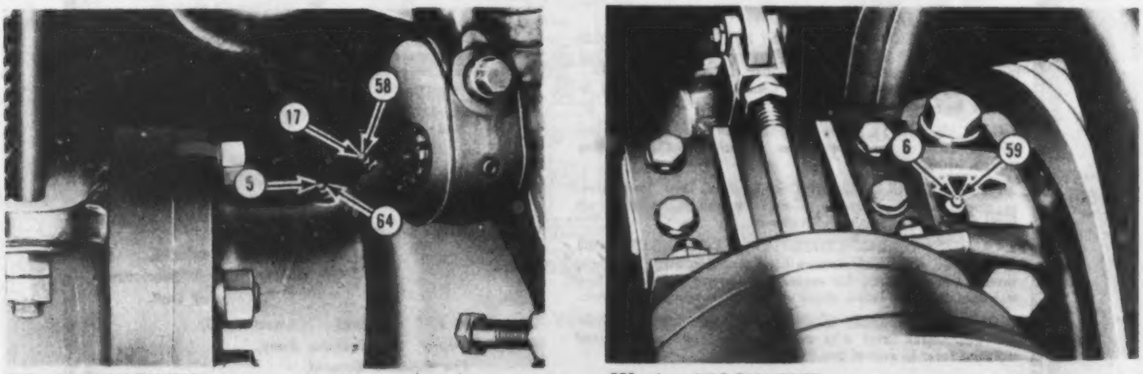
REF. 1 PLOW HYDRAULIC CYLINDER RAM

REF. 2 PLOW VERTICAL GUIDE RAIL



REF. 3 SPRING HANGER
REF. 57 SPRING HANGER

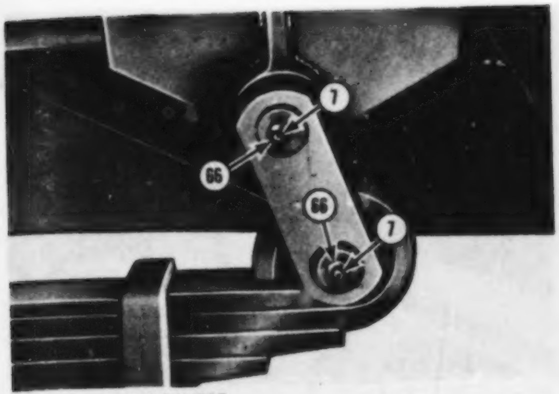
REF. 4 BRAKE CAMSHAFT
REF. 15 SLACK ADJUSTER
REF. 60 SLACK ADJUSTER
REF. 65 BRAKE CAMSHAFT



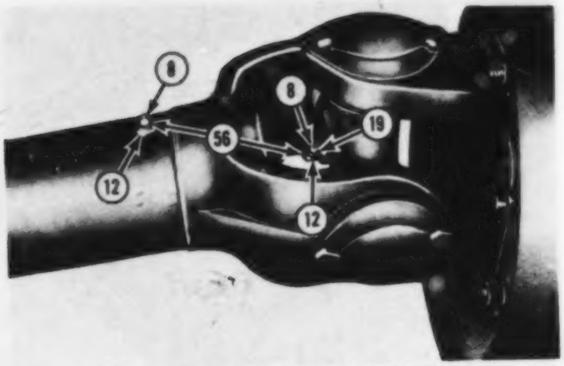
REF. 5 AXLE BEARING
REF. 17 AXLE BALL JOINT
REF. 58 AXLE BALL JOINT
REF. 64 AXLE BEARING

REF. 6 AXLE BALL PIVOT
REF. 59 AXLE BALL PIVOT

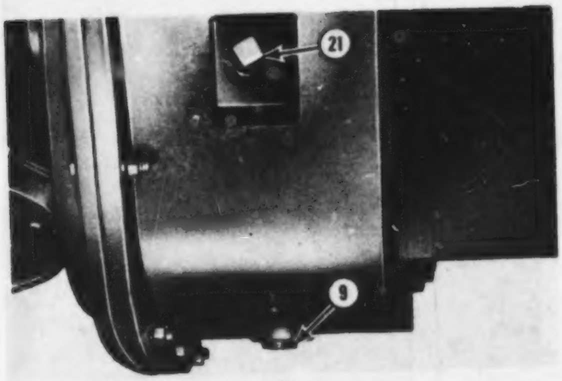
*Figure 25*—Continued.



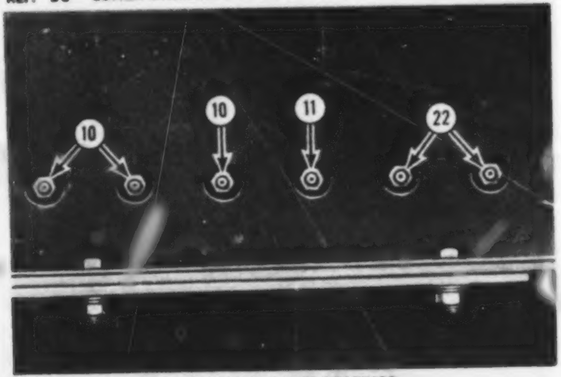
REF. 7 SPRING SHACKLE
REF. 66 SPRING SHACKLE



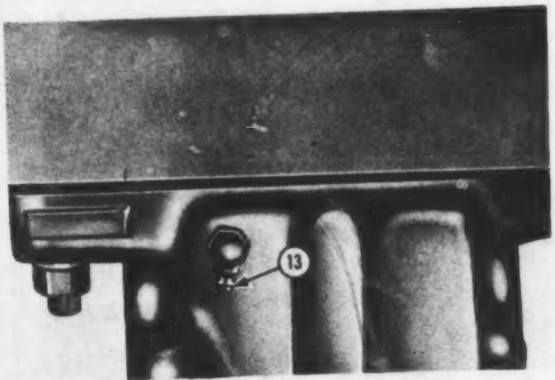
REF. 8 MAIN DRIVE UNIVERSAL JOINTS AND SPLINE
REF. 12 PLOW UNIVERSAL JOINTS AND SPLINE
REF. 19 PLOW UNIVERSAL JOINT
REF. 56 LOWER UNIVERSAL JOINT AND SPLINE



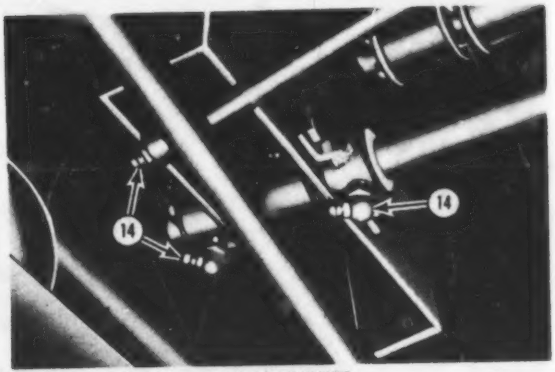
REF. 9 PLOW TRANSMISSION DRAIN
REF. 21 PLOW TRANSMISSION FILL AND LEVEL



REF. 10 PLOW TRANSMISSION SHAFT BEARINGS
REF. 11 CLUTCH THROWOUT BEARING
REF. 22 CLUTCH RELEASE SHAFT



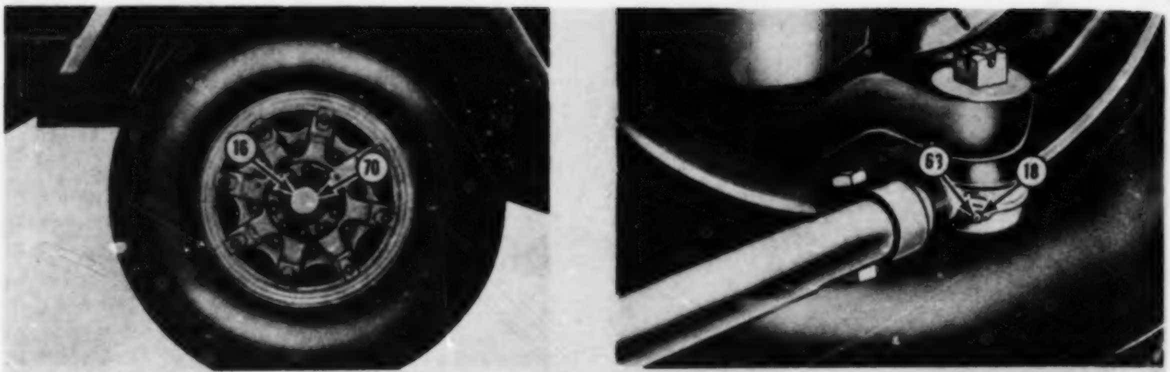
REF. 13 PILLOW BLOCK BEARING



REF. 14 CONTROL LEVER SHAFT BEARINGS

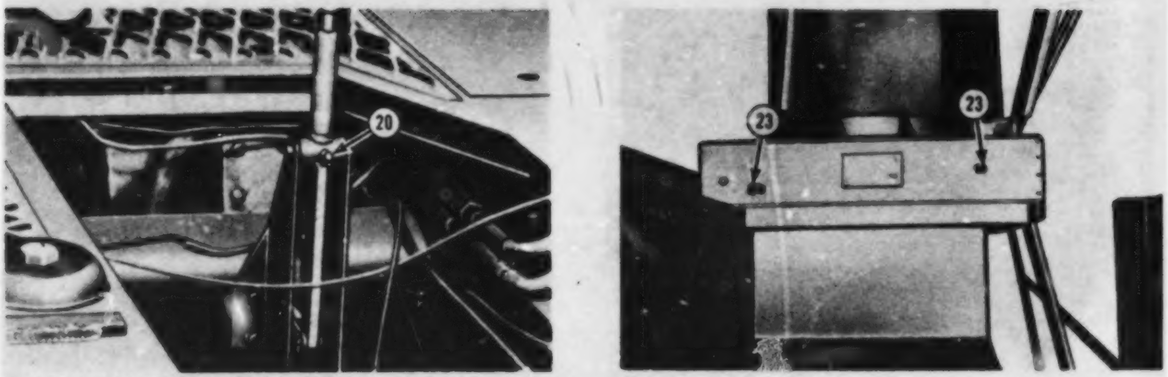
EMC 3825-213-10 25 (8)

*Figure 25*—Continued.



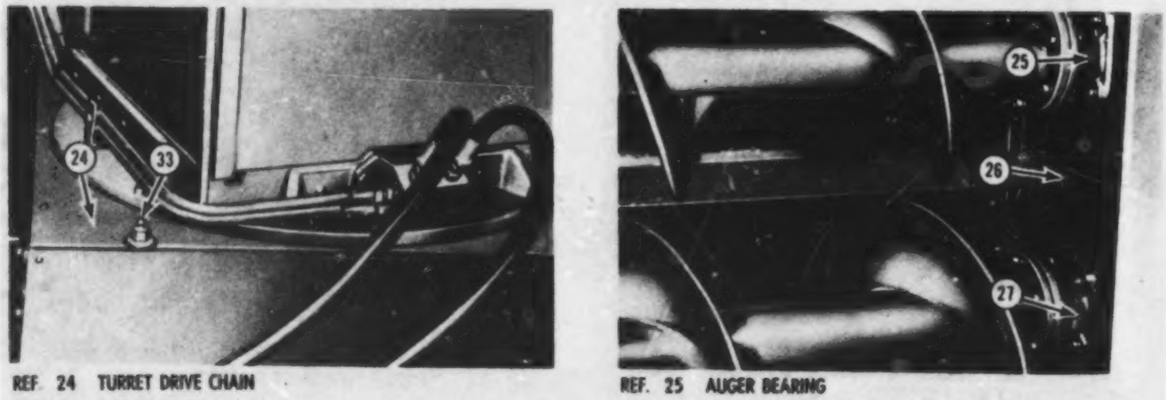
REF. 16 WHEEL BEARINGS
REF. 70 WHEEL BEARINGS

REF. 18 TIE ROD END
REF. 63 TIE ROD END



REF. 20 PLOW TRANSMISSION SHIFT PIVOT

REF. 23 CHUTE TURRET

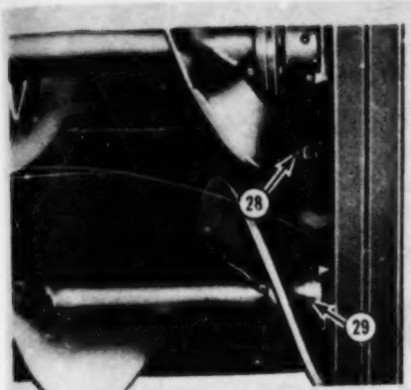


REF. 24 TURRET DRIVE CHAIN
REF. 33 CHUTE TURRET GEARCASE

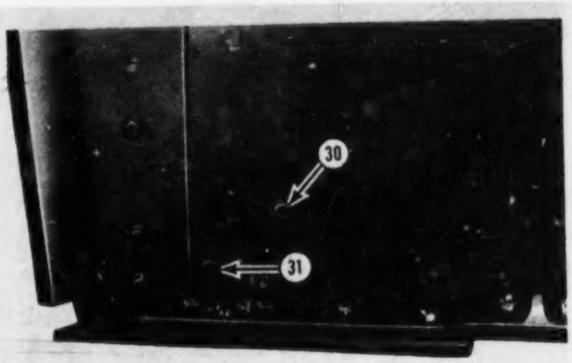
REF. 25 AUGER BEARING
REF. 26 UPPER STATIONARY IDLER BEARING
REF. 27 AUGER BEARING

EMC 3825-213-10 25 ⑨

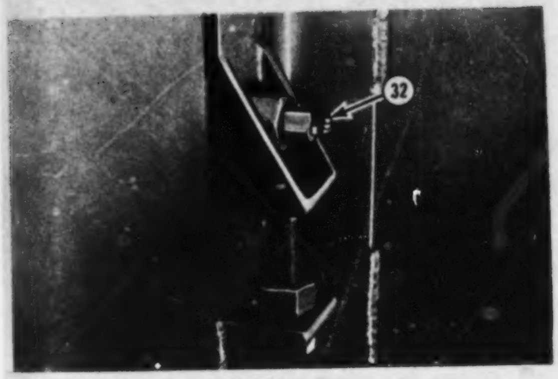
*Figure 25*—Continued.



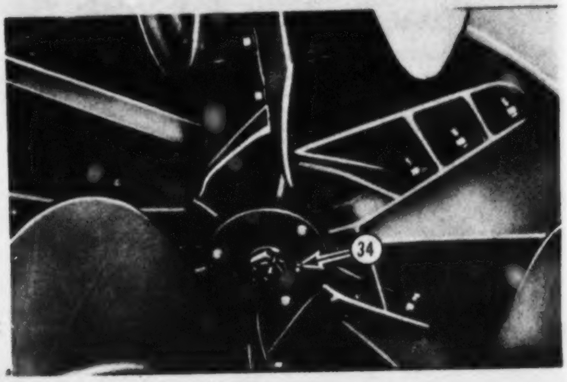
REF. 28 LOWER STATIONARY IDLER BEARING
REF. 29 AUGER BEARING



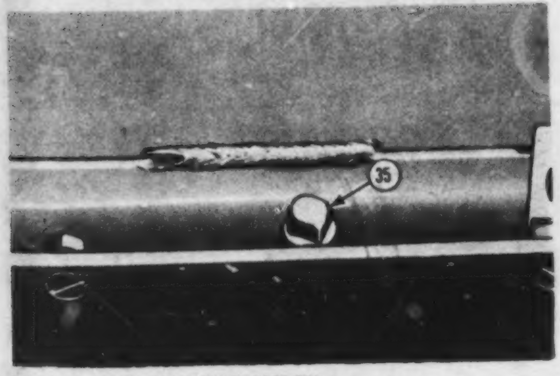
REF. 30 AUGER DRIVE CHAIN CASE LEVEL
REF. 31 AUGER DRIVE CHAIN CASE DRAIN



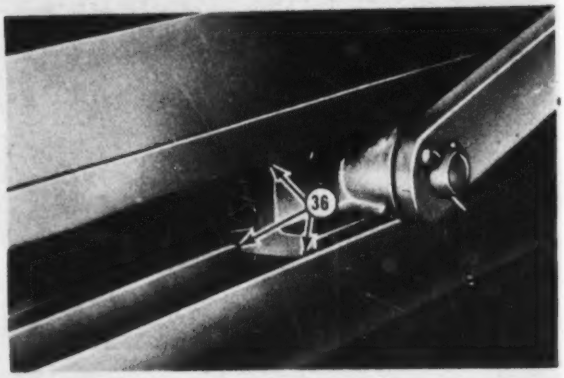
REF. 32 ADJUSTABLE IDLER BEARING



REF. 34 FAN HUB

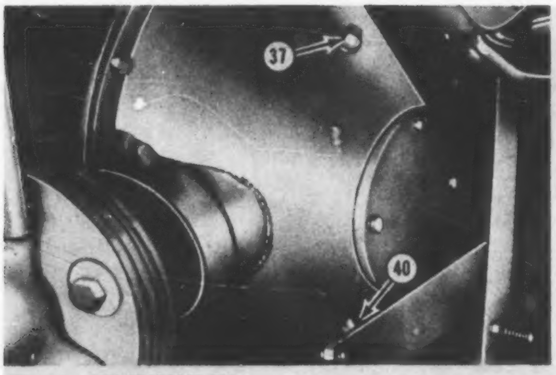


REF. 35 AUGER DRIVE CHAIN CASE FILL

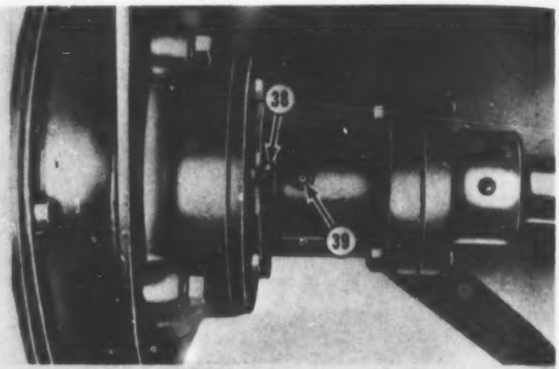


REF. 36 DIRECTIONAL GUIDE RAIL

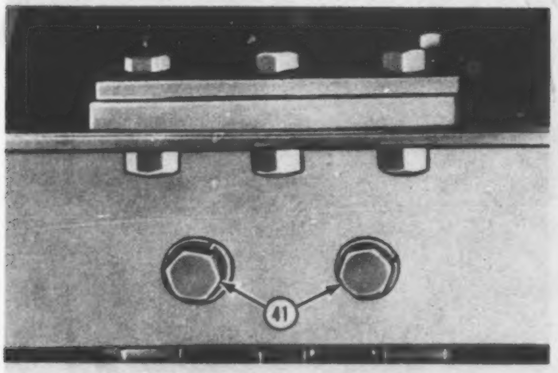
*Figure 25*—Continued.



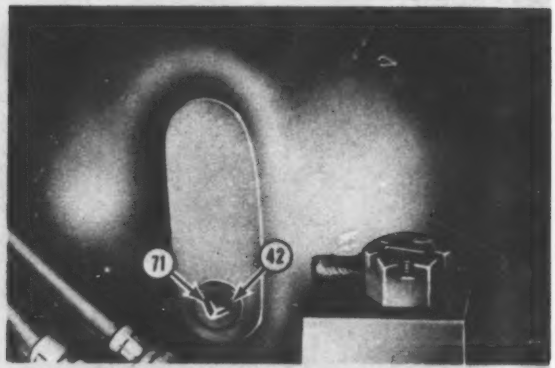
REF. 37 FAN GEARCASE FILL
REF. 40 FAN GEARCASE LEVEL



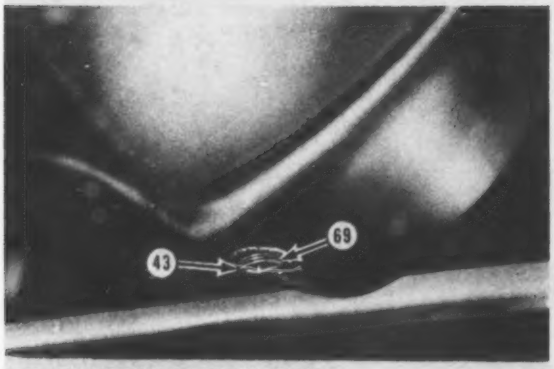
REF. 38 SHEAR COUPLING
REF. 39 AUGER DRIVE BEARING



REF. 41 FAN GEARCASE DRAIN



REF. 42 DIFFERENTIAL HOUSING FILL AND LEVEL
REF. 71 DIFFERENTIAL HOUSING FILL AND LEVEL



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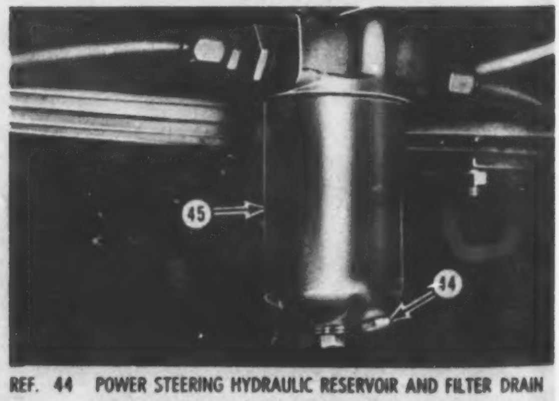
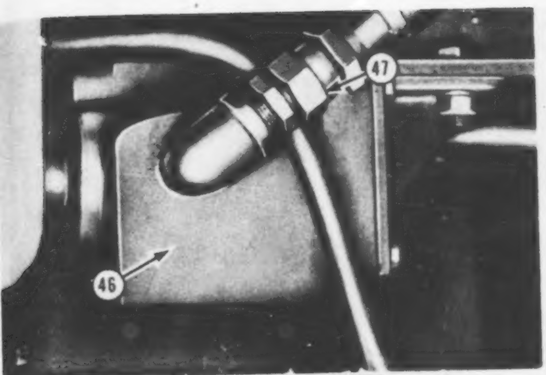
REF. 69 DIFFERENTIAL HOUSING DRAIN



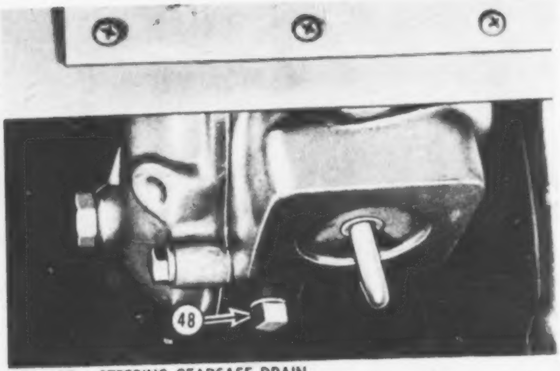
REF. 44 POWER STEERING HYDRAULIC RESERVOIR AND FILTER DRAIN
REF. 45 POWER STEERING HYDRAULIC OIL FILTER

EMC 3825-213-10-25 (11)

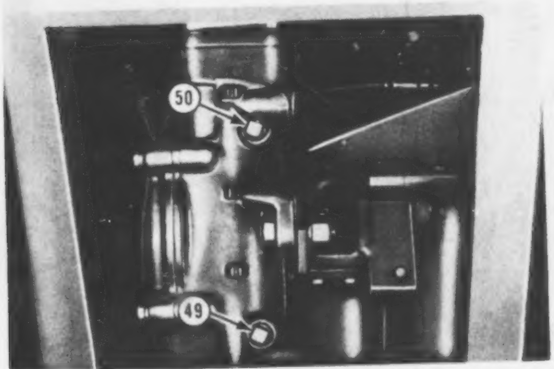
*Figure 25*—Continued.



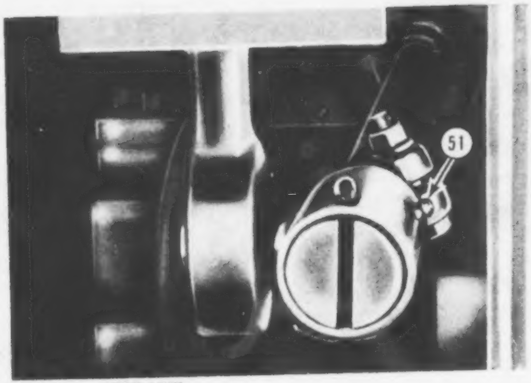
REF. 46 PLOW HYDRAULIC RESERVOIR OIL FILTER
REF. 47 PLOW HYDRAULIC RESERVOIR AND FILTER DRAIN



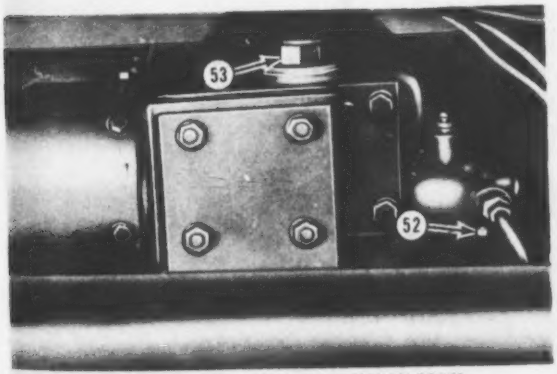
REF. 48 STEERING GEARCASE DRAIN



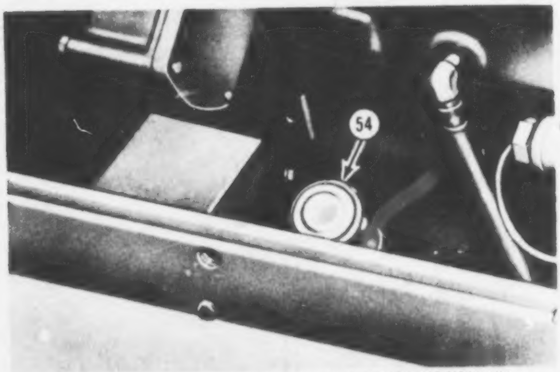
REF. 49 STEERING GEARCASE LEVEL
REF. 50 STEERING GEARCASE FILL



REF. 51 DRAG LINK



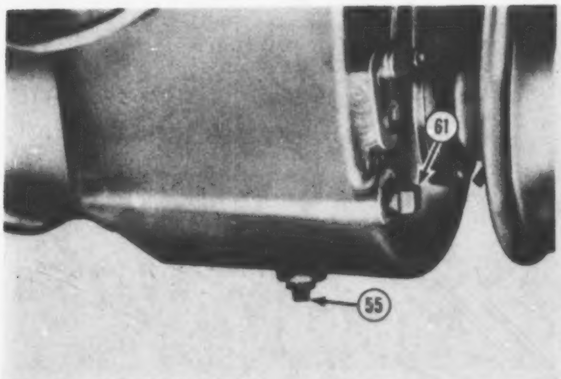
REF. 52 DIFFERENTIAL LOCK HYDRAULIC RESERVOIR DRAIN
REF. 53 DIFFERENTIAL LOCK HYDRAULIC RESERVOIR FILL AND LEVEL



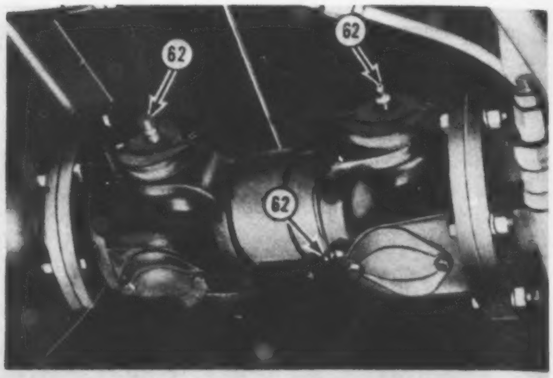
REF. 54 CARRIER TORQUE CONVERTER AND TRANSMISSION FILL

EMC 3825-213-10 25 (12)

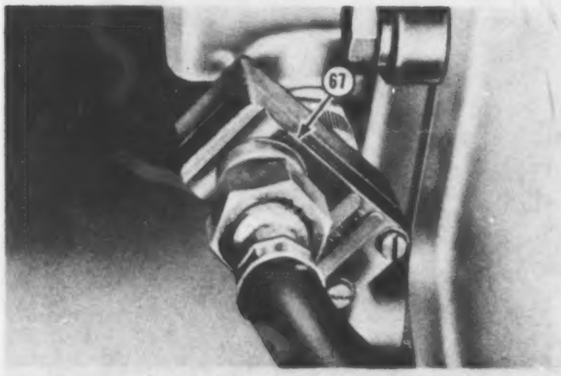
*Figure 25*—Continued.



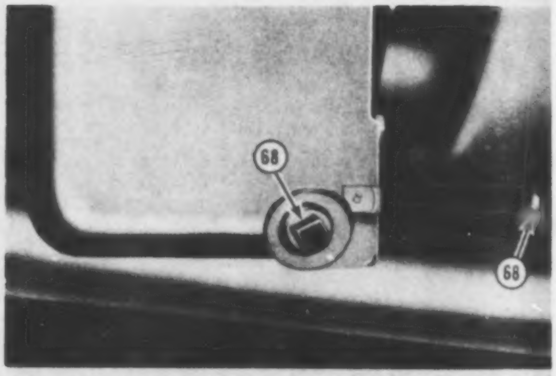
REF. 55 TRANSFER CASE DRAIN
REF. 61 TRANSFER CASE FILL AND LEVEL



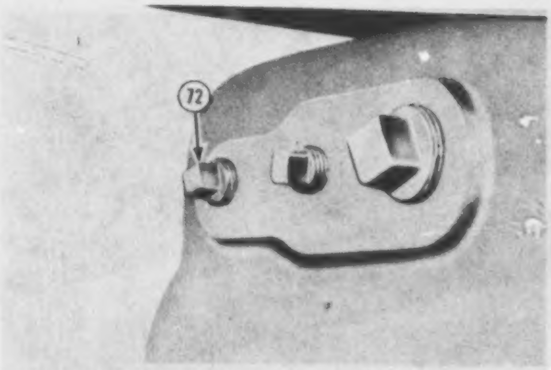
REF. 62 UPPER UNIVERSAL JOINTS



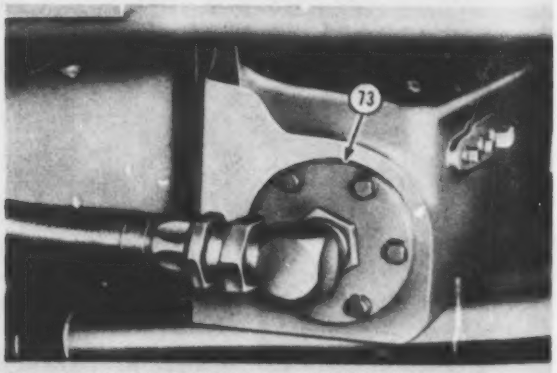
REF. 67 SPEEDOMETER DRIVE



REF. 68 CARRIER TORQUE CONVERTER AND TRANSMISSION DRAIN

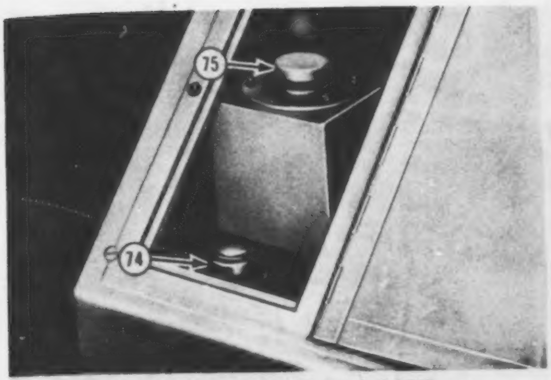


REF. 72 CARRIER TORQUE CONVERTER AND TRANSMISSION LEVEL

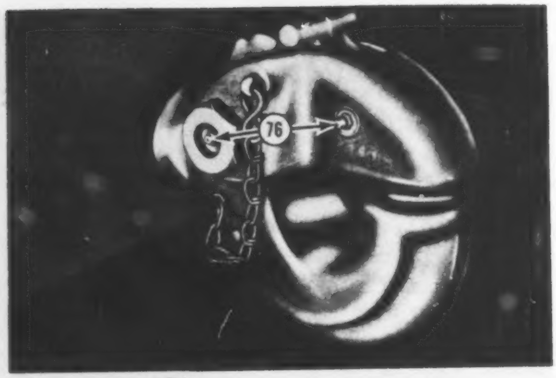


REF. 73 TORQUE CONVERTER AND TRANSMISSION SCREEN

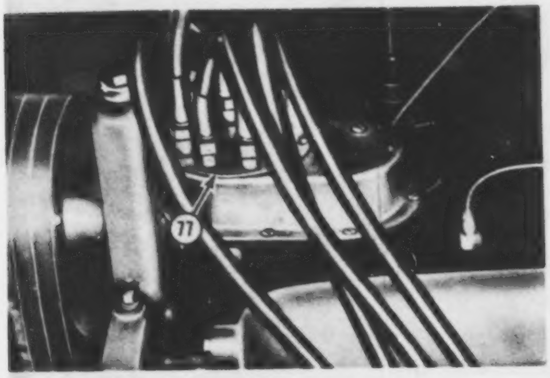
*Figure 25*—Continued.



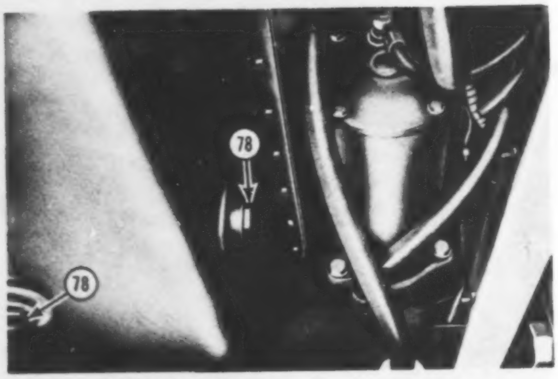
REF. 74 PLOW HYDRAULIC RESERVOIR FILL AND LEVEL
REF. 75 POWER STEERING HYDRAULIC RESERVOIR FILL AND LEVEL



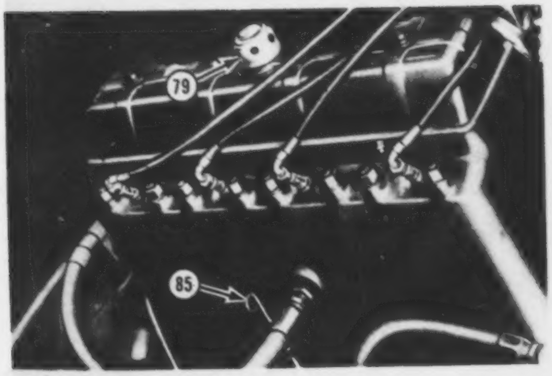
REF. 76 PINTLE HOOK



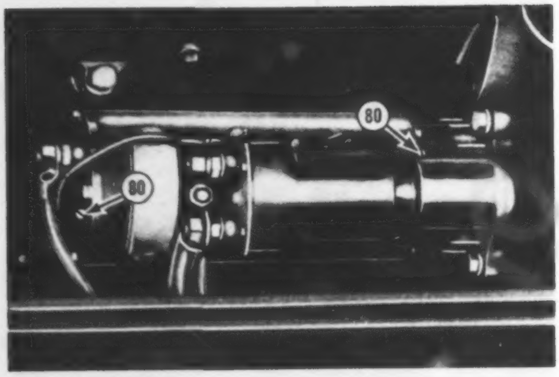
REF. 77 DISTRIBUTOR CAM WICK



REF. 78 CRANKCASE DRAIN



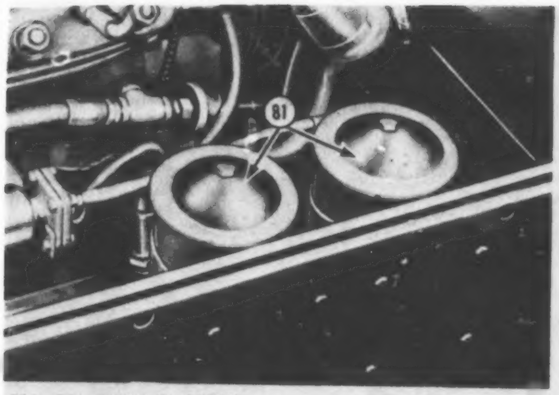
REF. 79 CRANKCASE FILL
REF. 85 CRANKCASE LEVEL GAGE



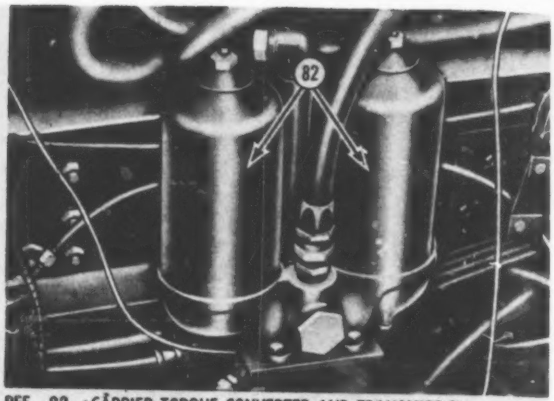
REF. 80 STARTER

EMC 3825-213-10 25 ⑭

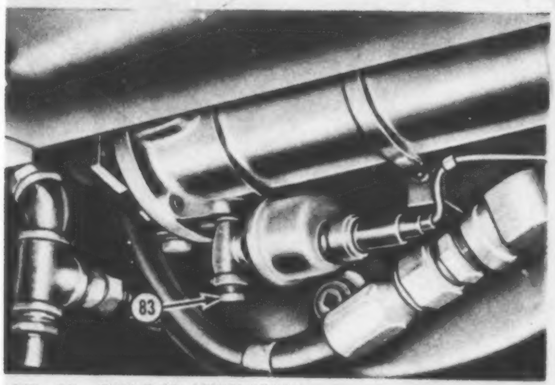
*Figure 25*—Continued.



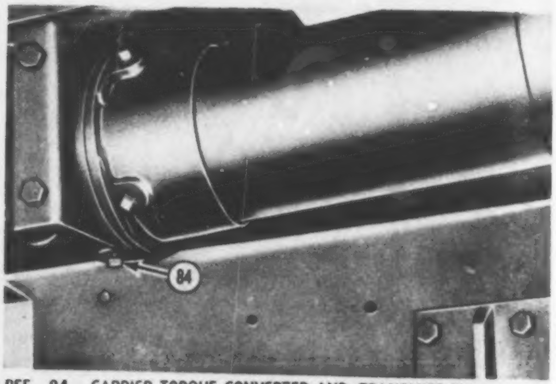
REF. 81 ENGINE OIL FILTERS



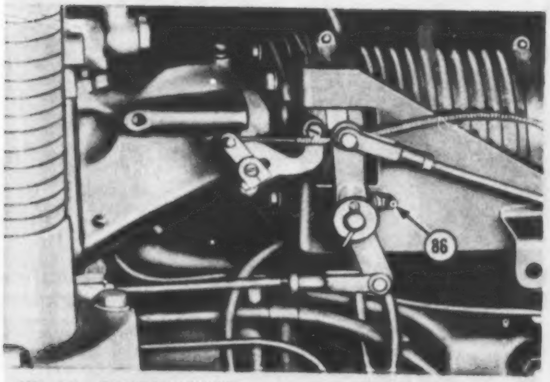
REF. 82 CARRIER TORQUE CONVERTER AND TRANSMISSION OIL FILTERS



REF. 83 ENGINE OIL COOLER DRAIN



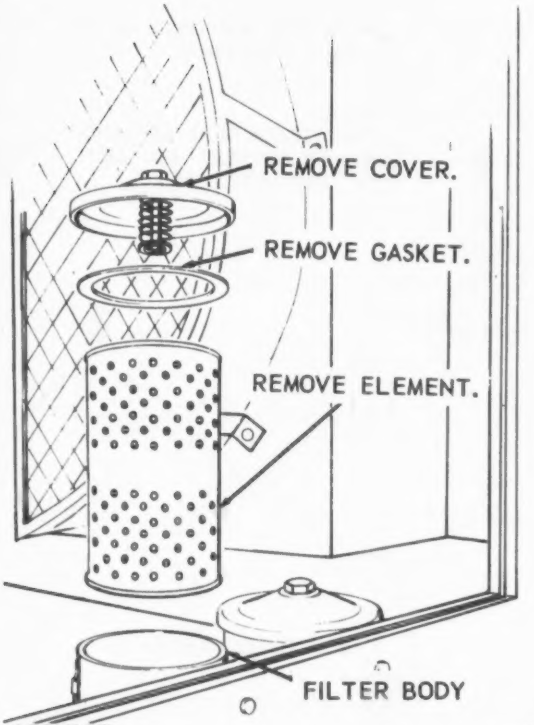
REF. 84 CARRIER TORQUE CONVERTER AND TRANSMISSION OIL COOLER DRAIN



REF. 86 TROTTLE LINKAGE

EMC 3825-213-10 25 ⑮

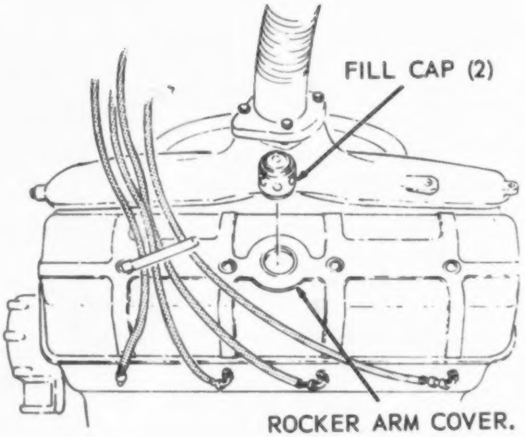
*Figure 25*—Continued.


REMOVE COVER.
REMOVE GASKET.
REMOVE ELEMENT.
FILTER BODY

SERVICE:
DISCARD ELEMENT, GASKET
AND CLEAN FILTER BODY.
INSTALL NEW ELEMENT AND
GASKET.

EMC 3825-213-10/26

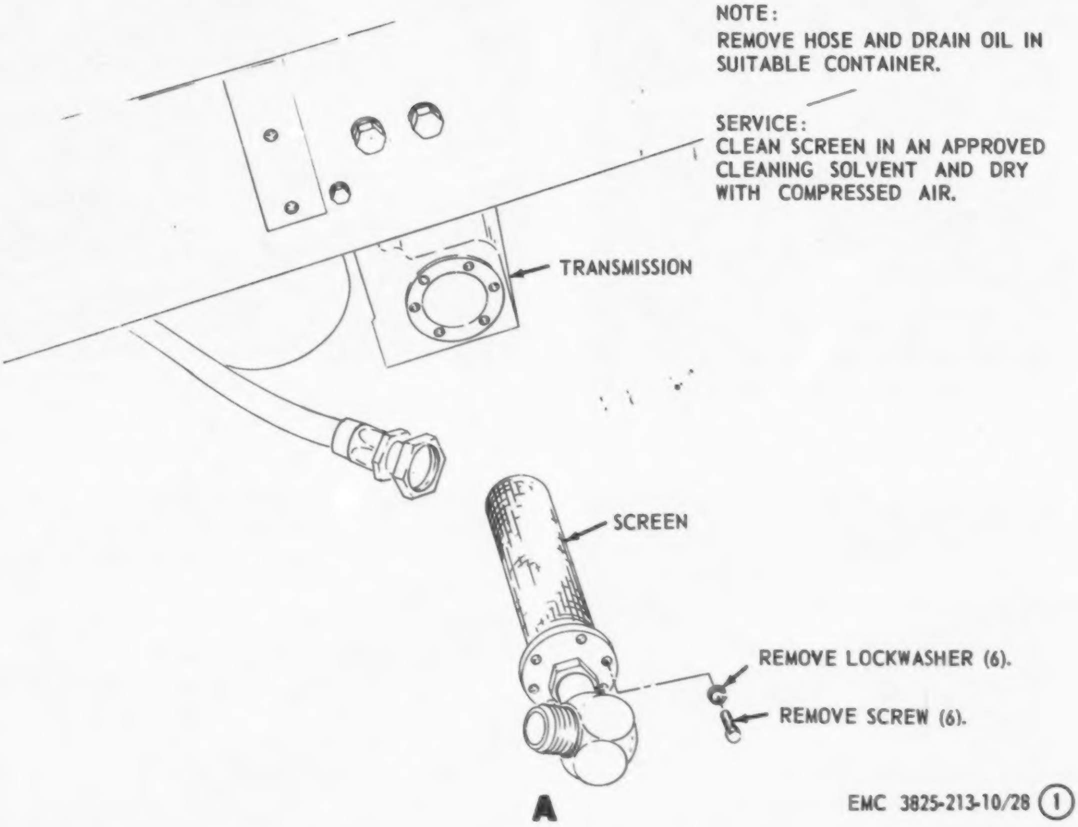
*Figure 26. Carrier and plow engine oil filter assemblies service.*


FILL CAP (2)
ROCKER ARM COVER.

NOTE:
REMOVE AND CLEAN FILL CAP.

EMC 3825-213-10/27

*Figure 27. Carrier and plow engine crankcase breather service.*


TRANSMISSION
SCREEN
A
EMC 3825-213-10/28 ①

NOTE:
REMOVE HOSE AND DRAIN OIL IN SUITABLE CONTAINER.

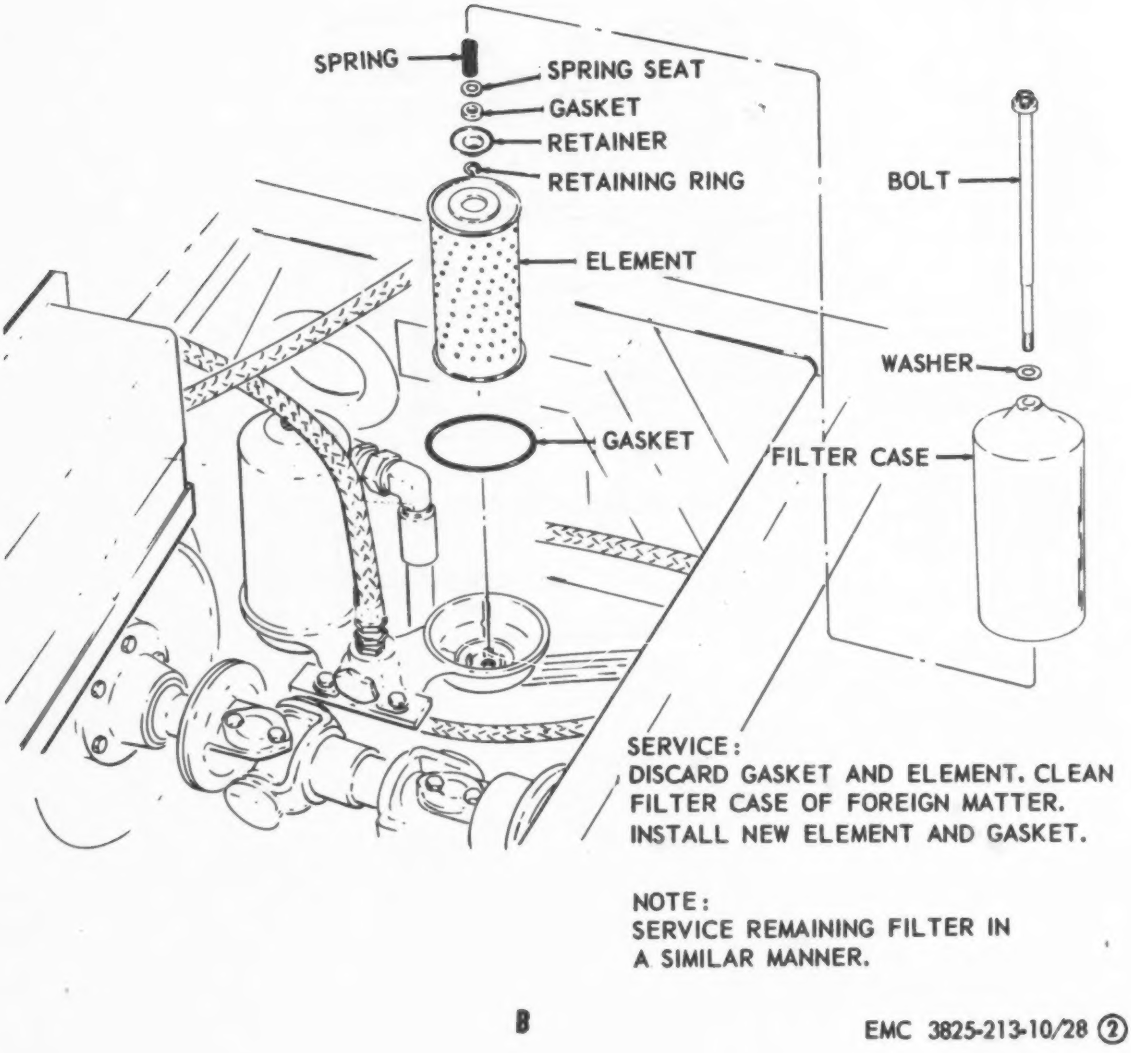
SERVICE:
CLEAN SCREEN IN AN APPROVED CLEANING SOLVENT AND DRY WITH COMPRESSED AIR.

REMOVE LOCKWASHER (6).

REMOVE SCREW (6).

A. Transmission screen service

*Figure 28. Torqmatic transmission and torque converter screen filter and fill cap service.*

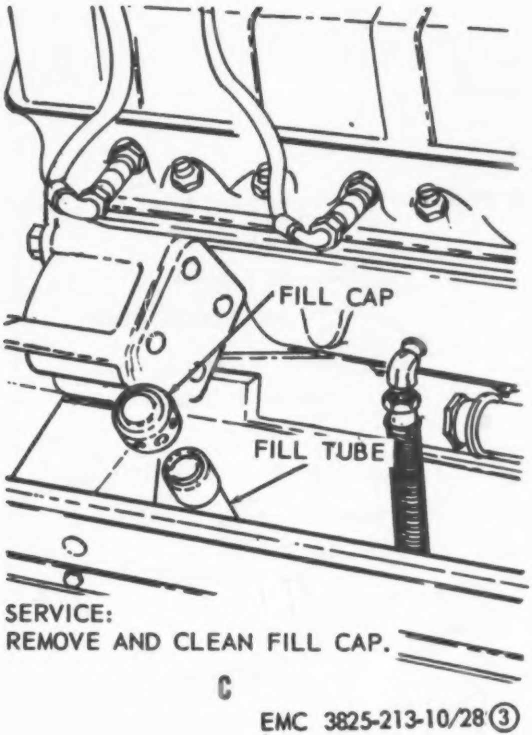

SPRING
SPRING SEAT
GASKET
RETAINER
RETAINING RING
BOLT
ELEMENT
WASHER
GASKET
FILTER CASE
B
EMC 3825-213-10/28 ②

SERVICE:
DISCARD GASKET AND ELEMENT. CLEAN FILTER CASE OF FOREIGN MATTER. INSTALL NEW ELEMENT AND GASKET.

NOTE:
SERVICE REMAINING FILTER IN A SIMILAR MANNER.

B. Torque converter filter service

*Figure 28*—Continued.


FILL CAP
FILL TUBE
SERVICE:
REMOVE AND CLEAN FILL CAP.
C
EMC 3825-213-10/28 ③

C. Fill cap service
*Figure 28*—Continued.

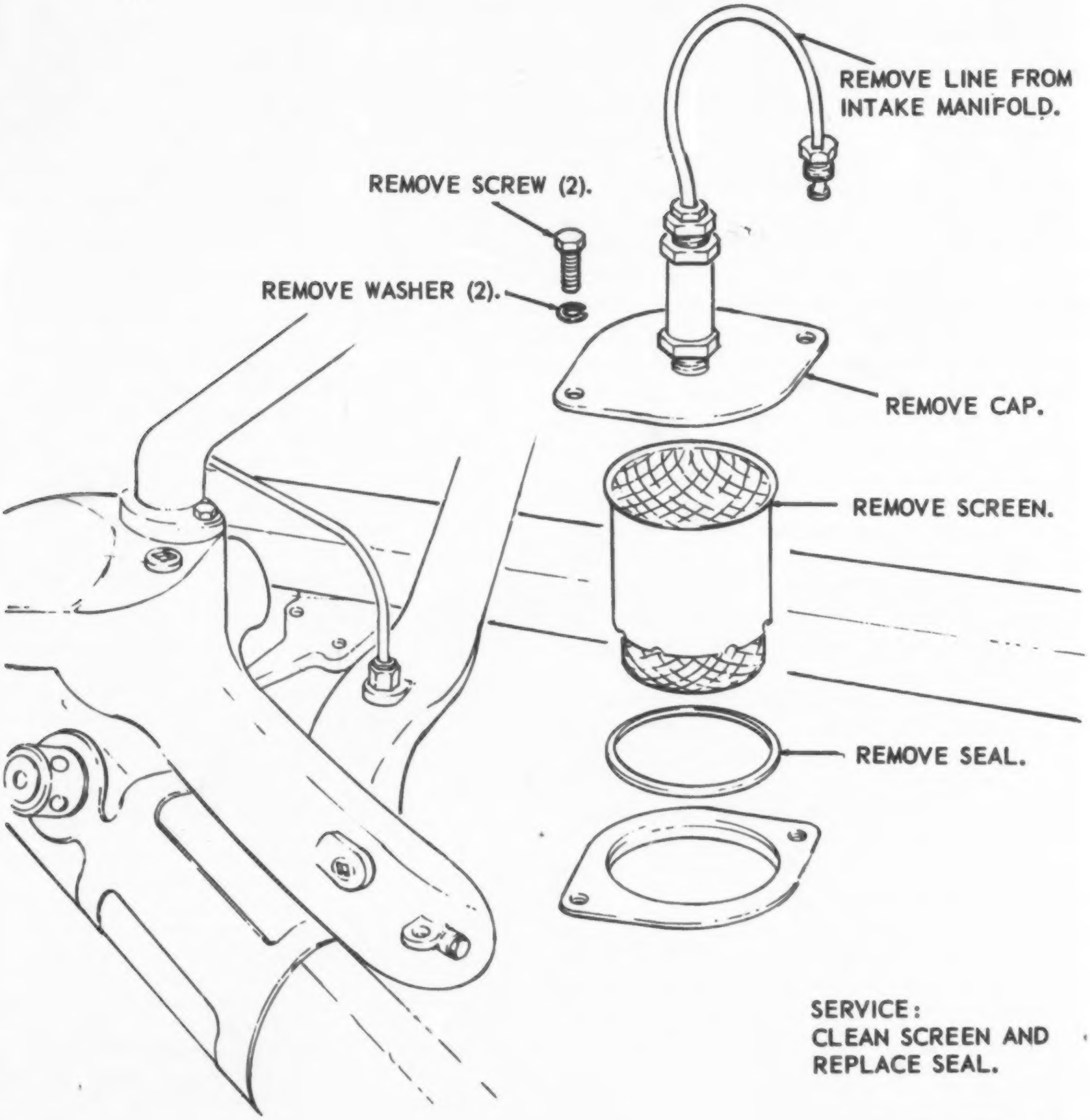

REMOVE LINE FROM
INTAKE MANIFOLD.
REMOVE SCREW (2).
REMOVE WASHER (2).
REMOVE CAP.
REMOVE SCREEN.
REMOVE SEAL.
SERVICE:
CLEAN SCREEN AND
REPLACE SEAL.
EMC 3825-213-10/29

*Figure 29. Carrier and plow engine crankcase ventilation service.*

## Section III. PREVENTIVE MAINTENANCE SERVICES

### 39. General

To insure that the equipment is ready for operation at all times it must be inspected systematically before operation, during operation, and after operation, so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance services will be performed before operation. Defects discovered during operation of the unit will be noted for future correction to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noticed during operation which would damage the equipment if operation were continued. After-operation services will be performed by the operator after every operating period. After-operation services will be performed at intervals based on the normal operations of the equipment. Reduce intervals to compensate for abnormal conditions. Defects or unsatisfactory operating characteristics beyond the scope of the operator to correct must be reported at the earliest opportunity to organizational maintenance. Responsibility for performance of preventive maintenance services rests not only with the operator but with the entire chain of command from section chief to commanding officer (AR 750–5).

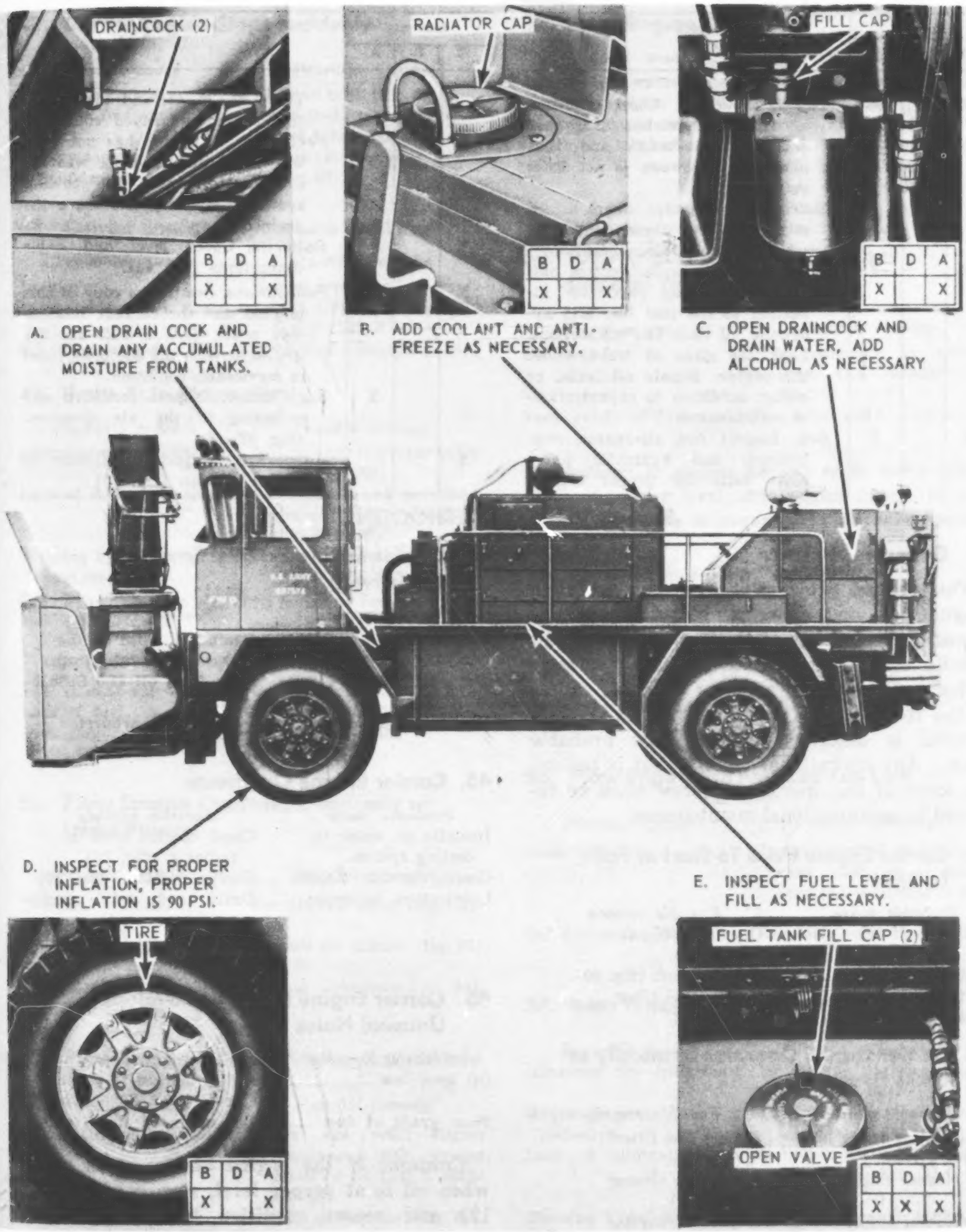
### 40. Operator's Daily Services

*a. General.* The intervals at which specific daily services are to be performed by the operator or crew are indicated by an X in the appropiate column in figure 30 as follows:

B—Before operation
D—During operation
A—After operation.

*b. Additional Daily Services (Not Illustrated).* An X in the appropriate column (s) indicates the interval at which the service is to be performed.

| Intervals | | | Procedure |
|---|---|---|---|
| B | D | A | |
| X | X | X | *Visual inspection.* Make a visual inspection of the entire unit, checking for insecurely mounted, damaged, or missing parts. Inspect all wires and terminals for damage or loose connections and any other damage that might have occurred since the equipment was last inspected. Correct or report any deficiency to organizational maintenance. |
| X | | | *Tools and equipment.* See that all tools and equipment assigned to the snow removal unit are in serviceable condition, clean, and properly mounted or stored. Replace any damaged or missing tools or equipment. |
| X | | | *Lights.* Inspect condition and mountings of all lights and reflectors. |
| X | | | *Windshield and cab.* Clean windshield. Inspect wipers and replace as necessary. |
| | X | | *Unusual operation and noises.* Investigate any abnormal or unusual operation such as engine overheating, too much vibration, or failure to respond to controls. If irregularities are noticed, stop operation at once and correct the condition or report it to organizational maintenance. |
| X | | | *Tampering.* Inspect to see whether the snow removal unit has been tampered with or damaged. Do not operate the unit until all deficiencies noticed have been corrected. |
| | | X | *Cleaning.* Remove any accumulation of dirt or frozen material from the snow removal unit, paying particular attention to the working platforms and steps. |
| X | | | *Crankcase oil.* Check the level and add oil if necessary (LO 5–3825–213–20). |
| X | | | *Transmission and torque converter service.* Add oil if necessary (LO 5–3825–213–20). |
| X | X | | *Fuel filters and strainer.* Inspect fuel filters and strainer for dirt and water. Service fuel filters (fig. 32) and strainer (fig. 31). |


DRAINCOCK (2)
B D A
X X
A. OPEN DRAIN COCK AND DRAIN ANY ACCUMULATED MOISTURE FROM TANKS.
RADIATOR CAP
B D A
X X
B. ADD COOLANT AND ANTI-FREEZE AS NECESSARY.
FILL CAP
B D A
X X
C. OPEN DRAINCOCK AND DRAIN WATER, ADD ALCOHOL AS NECESSARY
D. INSPECT FOR PROPER INFLATION, PROPER INFLATION IS 90 PSI.
TIRE
B D A
X X
E. INSPECT FUEL LEVEL AND FILL AS NECESSARY.
FUEL TANK FILL CAP (2)
OPEN VALVE
B D A
X X X

EMC 3825-213-10/30

*Figure 30. Operator's daily services.*

| Intervals | | | Procedure |
|---|---|---|---|
| B | D | A | |
| X | | X | *Fire extinguisher.* Check condition of fire extinguisher. See that seal is not broken and that mounting hardware is not loose or missing. |
| | X | | *Instrument and gages.* Check all instruments and gages frequently while the unit is in operation. |
| X | | X | *Leaks, general.* Inspect entire unit for leaks, giving particular attention to the fuel line and hydraulic oil lines and connections. Look for signs of leaks under the engine. Repair all leaks, or report condition to organizational maintenance. |
| X | | X | *Belt.* Inspect fan, alternator, compressor, and hydraulic pump drive belts for proper tension (figs. 37, 39, 41, and 45). Check for cracked or frayed condition. |
| X | | X | *Protection.* If engine has not been winterized and freezing weather is expected, drain the cooling system completely and leave the draincocks open. |
| X | | | *Batteries.* Check level and cable connections (fig. 44). |
| X | | | *Publications.* See that a copy of this manual and the current lubrication order (LO 5-3825-213-20) are on or with the equipment and in serviceable condition. |
| | | X | *Air Cleaner.* Inspect condition and mounting of the air cleaners. (fig. 33). |
| X | | | *Handbrake.* Adjust handbrake to proper tension (fig. 40). |

## Section VI. TROUBLESHOOTING

### 41. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failures of the snow removal unit and its components. Each trouble symptom stated is followed by a list of probable causes of the trouble. The possible remedy recommended is described opposite the probable cause. Any operational trouble that is beyond the scope of the operator or crew must be reported to organizational maintenance.

### 42. Carrier Engine Hard To Start or Fails To Start

| *Probable cause* | *Possible remedy* |
|---|---|
| Fuel shutoff valve closed | Open shutoff valve (fig. 30). |
| Lack of fuel | Fill fuel tank (fig. 30). |
| Dirt, gum or water in fuel filter. | Service fuel filter (fig. 32). |

### 43. Carrier Engine Operates Erratically or Lacks Power

| *Probable cause* | *Possible remedy* |
|---|---|
| Sediment or water in fuel system. | Service fuel filter (fig. 32). |
| Air cleaner clogged | Service air cleaner (fig. 33). |
| Carburetor out of adjustment. | Adjust carburetor (fig. 35). |

### 44. Carrier Engine Exhaust Smokes Excessively

| *Probable cause* | *Possible remedy* |
|---|---|
| Lubricating oil to thin | Drain and refill engine crankcase with proper grade of oil (LO 5-3825-213-20). |
| Fuel mixture too rich | Adjust the carburetor (fig. 35). |

### 45. Carrier Engine Overheats

| *Probable cause* | *Possible remedy* |
|---|---|
| Insufficient water in cooling system. | Check coolant level in radiator (fig. 30). |
| Cooling system clogged | Service radiator (fig. 36). |
| Lubrication improper | Drain and refill engine crankcase with proper grade of oil (LO 5-3825-213-20). |

### 46. Carrier Engine Knock or Develops Unusual Noise

| *Probable cause* | *Possible remedy* |
|---|---|
| Oil level low | Fill crankcase to proper level (LO 5-3825-213-20). |
| Poor grade of fuel | Use approved fuel (table 1). |

***Caution*: If the engine knocks or is noisy when oil is at proper level, stop engine (par. 17) and report condition to organizational maintenance.**

## 47. Carrier Engine Stops Suddenly

| *Probable cause* | *Possible remedy* |
|---|---|
| Fuel tank empty | Fill fuel tank (fig. 30). |
| Water in fuel system | Drain fuel tank. Service fuel filters (fig. 32). |
| Carburetor out of adjustment. | Adjust carburetor (fig. 35). |

## 48. Carrier Engine Oil Pressure Too Low

| *Probable cause* | *Possible remedy* |
|---|---|
| Lack of oil | Inspect level of oil in crankcase, add oil if necessary (LO 5-3825-213-20). |
| Oil filter clogged | Service oil filters (fig. 26). |

## 49. Front Axle Steers Hard

| *Probable cause* | *Possible remedy* |
|---|---|
| Improper tire inflation | Inflate tires to proper inflation (fig. 30). |
| Lack of lubrication | Lubricate tie rod ends and steering sockets (LO 5-3825-213-20). |
| Steering hydraulic system fluid level low. | Service hydraulic tanks (LO 5-3825-213-20). |

## 50. Plow Engine Hard to Start or Fails To Start

| *Probable cause* | *Possible remedy* |
|---|---|
| Fuel shutoff valve closed | Open shutoff valve. |
| Lack of fuel | Fill fuel tank (fig. 30). |
| Dirt, gum, or water in fuel filter. | Service fuel filter (fig. 32). |

## 51. Plow Engine Operates Erratically or Lacks Power

| *Probable cause* | *Possible remedy* |
|---|---|
| Sediment or water in fuel system. | Service fuel filter (fig. 32). |
| Air cleaner clogged | Service air cleaner (fig. 33) |
| Carburetor out of adjustment. | Adjust carburetor (fig. 35). |

## 52. Plow Engine Exhaust Smokes Excessively

| *Probable cause* | *Possible remedy* |
|---|---|
| Lubricating oil too thin | Drain and refill engine crankcase with proper grade of oil (LO 5-3825-213-20). |
| Fuel mixture too rich | Adjust carburetor (fig. 35). |

## 53. Plow Engine Overheats

| *Probable cause* | *Possible remedy* |
|---|---|
| Insufficient water in cooling system. | Check coolant level in radiator (fig. 36). |
| Cooling system clogged | Service radiator (fig. 36). |
| Improper lubrication | Drain and refill crankcase with proper grade of oil (LO 5-3825-213-20). |

## 54. Plow Engine Knocks or Develops Unusual Noise

| *Probable cause* | *Possible remedy* |
|---|---|
| Oil level low | Fill crankcase to proper level (LO 5-3825-213-20). |
| Poor grade of fuel | Use approved fuel (table I). |

***Caution*: If engine knocks or is noisy when oil is at proper level, stop engine (par. 19) and report condition to organizational maintenance.**

## 55. Plow Engine Stops Suddenly

| *Probable cause* | *Possible remedy* |
|---|---|
| Fuel tank empty | Fill fuel tank (fig. 30). |
| Water in fuel system | Drain fuel tank. Service fuel filter (fig. 32). |
| Carburetor out of adjustment. | Adjust carburetor (fig. 35). |

## 56. Plow Engine Oil Pressure Too Low

| *Probable Cause* | *Possible Remedy* |
|---|---|
| Lack of oil | Inspect level of oil in crankcase. Add oil if necessary. (LO 5-3825-213-20). |
| Oil filters clogged | Service oil filters (fig. 26). |

## 57. Rear Wheels Fail To Steer

| *Probable Cause* | *Possible Remedy* |
|---|---|
| Improper tire inflation | Inflate tire to proper inflation (fig. 30). |
| Hydraulic pump defective. | Report to organizational maintenance. |
| Lack of lubrication | Lubricate tie rod ends and steering sockets (LO 5-3825-213-20). |
| Steering hydraulic system fluid level low. | Service hydraulic tanks (LO 5-3825-213-20). |

best copy available

## 58. Engine or Personnel Heaters Fail To Operate

| *Probably cause* | *Possible remedy* |
|---|---|
| Fuel supply cut off | Turn on fuel supply. |
| Batteries discharged or defective. | Report to organizational maintenance. |
| Circuit breaker on control box open. | Push in on circuit breaker (fig. 23). |
| Fresh air intake clogged | Report to organizational maintenance. |

## 59. Plow Fails To Elevate

| *Probably cause* | *Possible remedy* |
|---|---|
| Low hydraulic oil level in tank. | Fill tank with hydraulic oil (LO 5-3825-213-20). |
| Filter clogged | Change filter (fig. 50). |
| Hydraulic oil in tank is dirty. | Drain and fill tank with clean oil (LO 5-3825-213-20). |
| Hydraulic pump does not operate. | Report to organizational maintenance. |
| Loose or broken hydraulic line. | Report defective line to organizational maintenance. |

## 60. Chute Assembly Fail To Elevate or Swing

| *Probably cause* | *Possible remedy* |
|---|---|
| Loose or broken hydraulic line. | Report defective line to organizational maintenance. |
| Defective hydraulic controls. | Report to organizational maintenance. |
| Hydraulic pump or motor does not operate. | Report to organizational maintenance. |
| Low hydraulic oil level in tank. | Fill tank with hydraulic oil (LO 5-3825-213-20). |
| Hydraulic filter is clogged. | Service hydraulic filter (fig. 50). |

## 61. Transmission Oil Cooler Fails To Operate

| *Probably cause* | *Possible remedy* |
|---|---|
| Clogged oil filters | Service oil filters (fig. 28) |
| Lack of oil | Fill transmission (LO 5-3825-213-20). |
| Leak in oil line | Report to organizational maintenance. |

## 62. Fan Assembly Fails To Operate

| *Probably cause* | *Possible remedy* |
|---|---|
| Shear bolts broken | Replace shear bolts (fig. 52). |
| Clutch out of adjustment | Adjust clutch. |
| Propellor shaft defective | Report to organizational maintenance. |

## 63. Auger Assembly Fails To Operate

| *Probable cause* | *Possible remedy* |
|---|---|
| Shear bolts broken | Replace shear bolts (fig. 51). |
| Propellor shaft defective | Report to organizational maintenance. |
| Clutch out of adjustment | Adjust clutch (fig. 48). |

## Section V. FIELD EXPEDIENT REPAIRS

### 64. Field Expedient Repairs

The following troubles may occur while the snow removal unit is operating in the field. Also, supplies and repair parts may not be available and normal remedial action cannot be performed. When this is so, the expedient remedy provided may be used. Field expedients will be used only during emergency conditions.

### 65. Engines Operate Erratically or Lack Power

| *Trouble* | *Expedient remedy* |
|---|---|
| Fuel filter clogged | Remove and discard clogged filters (fig. 32). Reinstall bowl and operate until new filters are available. |

### 66. Fuel Tank Leaks

| *Trouble* | *Expedient remedy* |
|---|---|
| Fuel tank has pinhole leak. | Drain fuel tank, close shutoff valve and operate engines on one fuel tank. |

### 67. Engine Overheats

| *Trouble* | *Expedient remedy* |
|---|---|
| Defective thermostats. | Remove thermostat and operate until defective thermostat is replaced. |

### 68. Hand Throttle Inoperative

| *Trouble* | *Expedient remedy* |
|---|---|
| Bent or broken cable | Interchange with choke cable. |

### 69. Snow Shute Hydraulic System Inoperative

| *Trouble* | *Expedient remedy* |
|---|---|
| Snow chute hydraulic lines damaged. | Extend and operate chute manually. |

# CHAPTER 4

# CARRIER MAINTENANCE INSTRUCTIONS

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## Section I. CARRIER ENGINE FUEL SYSTEM

### 70. General

The carrier engine fuel system consists of a carrier engine fuel tank, two fuel pumps, fuel filter, and air cleaner. The following paragraphs describe and illustrate the maintenance functions to be performed by the operator for the carrier and plow engine fuel system.

### 71. Carrier Engine Fuel Tank Strainer and Breather Service

Service carrier engine fuel tank strainer and breather as illustrated in figure 31.

### 72. Carrier Engine Fuel Filter Service

Service carrier engine fuel filter as illustrated in figure 32.

### 73. Carrier Engine Air Cleaner Service

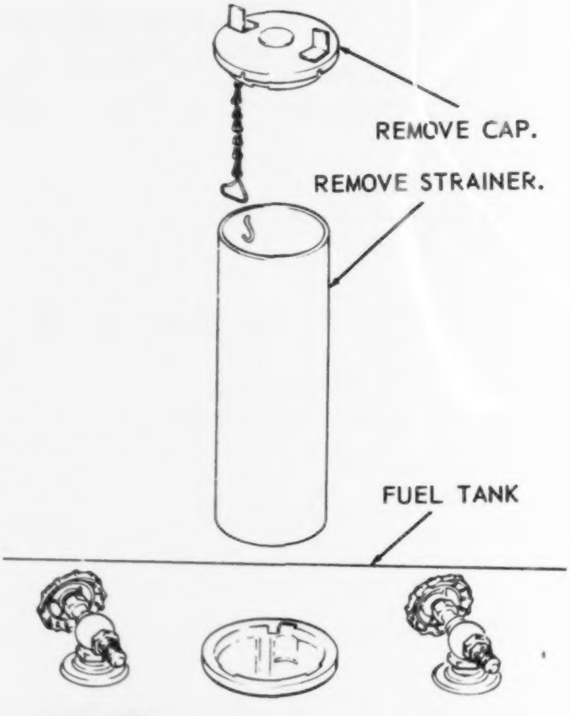
Service carrier engine air cleaner as illustrated in figure 33.

### 74. Carrier Engine Fuel Pump Service

Service carrier engine fuel pump as illustrated in figure 34.

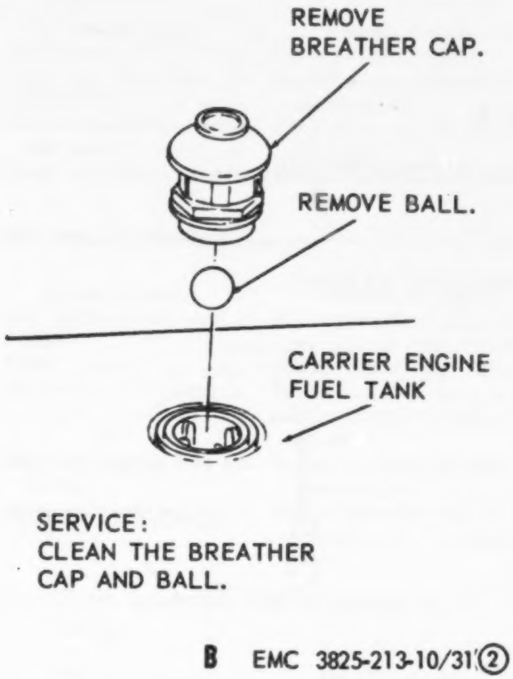
### 75. Carrier Engine Carburetor Adjustment

Adjust carrier engine carburetor as illustrated in figure 35.



A. Strainer service

*Figure 31. Carrier and plow engine fuel tank strainer and breather service.*


REMOVE BREATHER CAP.
REMOVE BALL.
CARRIER ENGINE FUEL TANK
SERVICE: CLEAN THE BREATHER CAP AND BALL.
B EMC 3825-213-10/31②

B. Breather service
*Figure 31*—Continued.

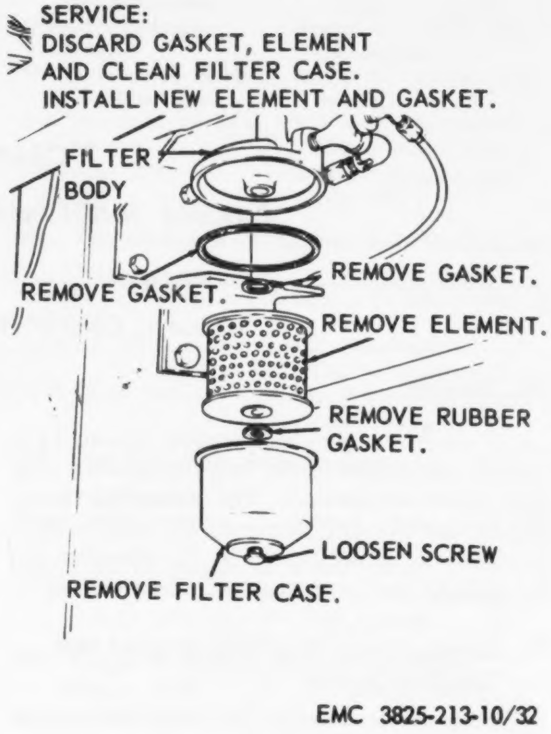
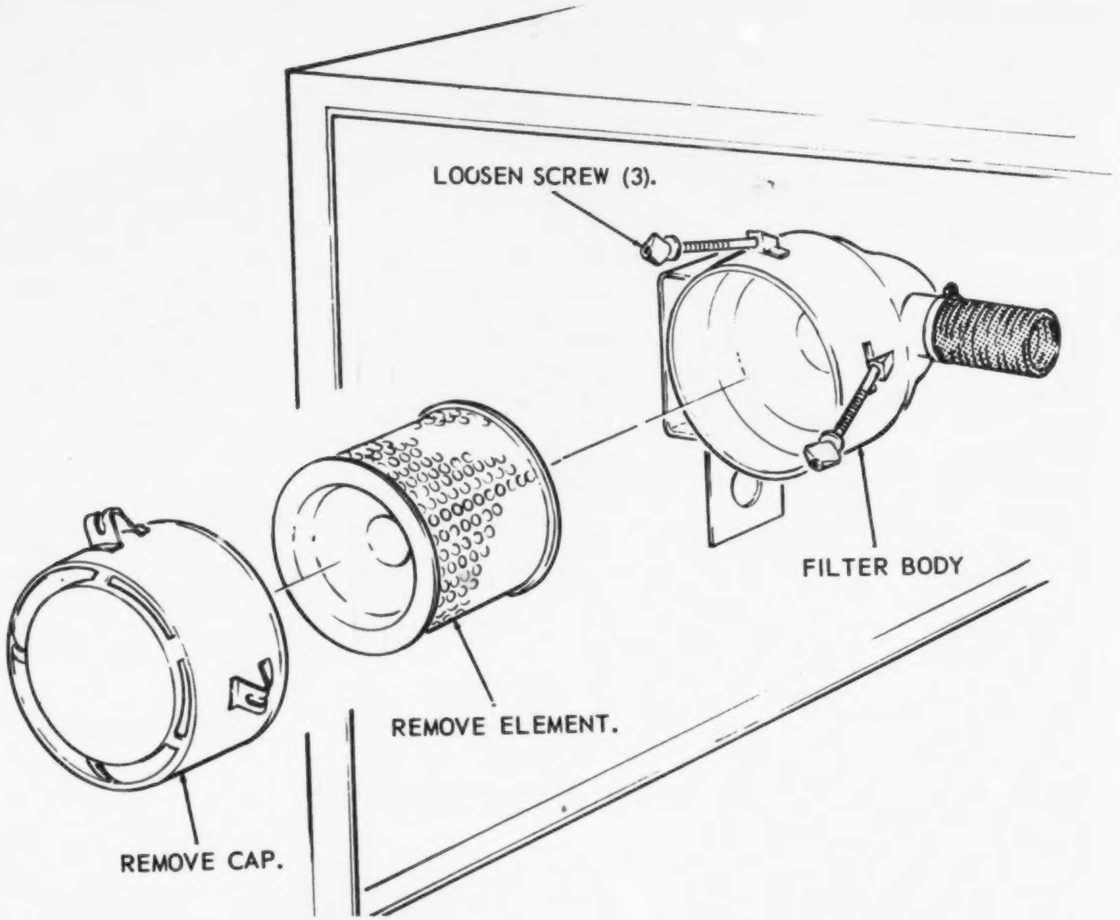

SERVICE: DISCARD GASKET, ELEMENT AND CLEAN FILTER CASE. INSTALL NEW ELEMENT AND GASKET.
FILTER BODY
REMOVE GASKET.
REMOVE GASKET.
REMOVE ELEMENT.
REMOVE RUBBER GASKET.
LOOSEN SCREW
REMOVE FILTER CASE.
EMC 3825-213-10/32

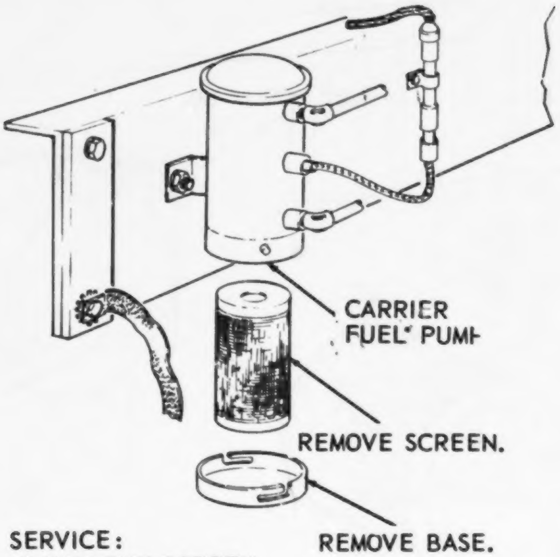
*Figure 32. Carrier and plow engine fuel filter service.*


LOOSEN SCREW (3).
FILTER BODY
REMOVE ELEMENT.
REMOVE CAP.

SERVICE:
REPLACE ELEMENT AND CLEAN
CAP OF FOREIGN MATTER.

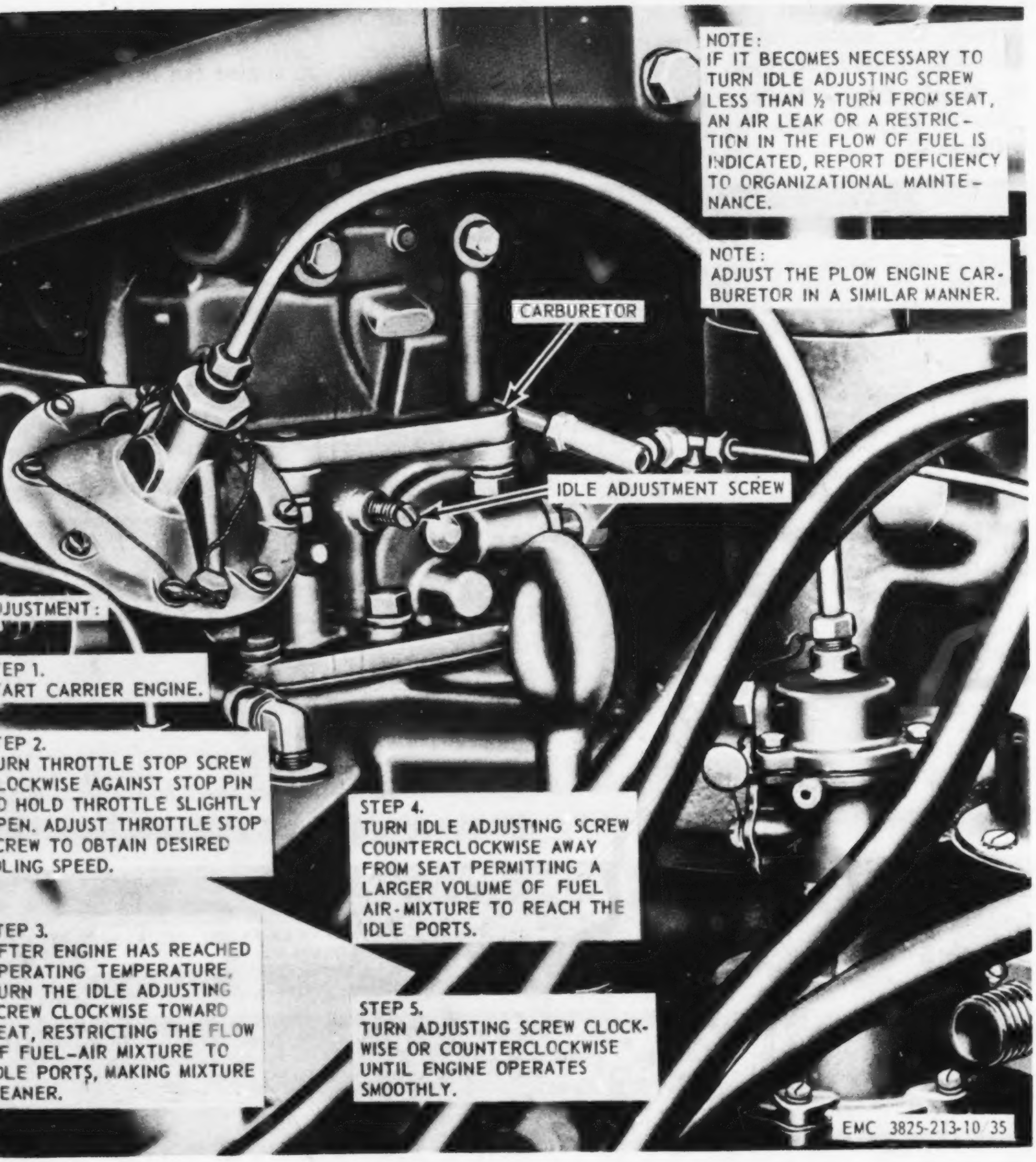
EMC 3825-213-10/33

*Figure 33. Carrier and plow engine air cleaner service.*


CARRIER
FUEL PUMP
REMOVE SCREEN.
SERVICE:
CLEAN THE SCREEN
REMOVE BASE.

EMC 3825-213-10/34

*Figure 34. Carrier and plow engine fuel pump service.*



NOTE:
IF IT BECOMES NECESSARY TO TURN IDLE ADJUSTING SCREW LESS THAN ½ TURN FROM SEAT, AN AIR LEAK OR A RESTRICTION IN THE FLOW OF FUEL IS INDICATED, REPORT DEFICIENCY TO ORGANIZATIONAL MAINTENANCE.

NOTE:
ADJUST THE PLOW ENGINE CARBURETOR IN A SIMILAR MANNER.

JUSTMENT:

EP 1.
ART CARRIER ENGINE.

EP 2.
JRN THROTTLE STOP SCREW
LOCKWISE AGAINST STOP PIN
) HOLD THROTTLE SLIGHTLY
PEN. ADJUST THROTTLE STOP
CREW TO OBTAIN DESIRED
LING SPEED.

EP 3.
FTER ENGINE HAS REACHED
PERATING TEMPERATURE,
URN THE IDLE ADJUSTING
CREW CLOCKWISE TOWARD
EAT, RESTRICTING THE FLOW
F FUEL-AIR MIXTURE TO
LE PORTS, MAKING MIXTURE
EANER.

STEP 4.
TURN IDLE ADJUSTING SCREW COUNTERCLOCKWISE AWAY FROM SEAT PERMITTING A LARGER VOLUME OF FUEL AIR-MIXTURE TO REACH THE IDLE PORTS.

STEP 5.
TURN ADJUSTING SCREW CLOCKWISE OR COUNTERCLOCKWISE UNTIL ENGINE OPERATES SMOOTHLY.

*Figure 35. Carrier and plow engine carburetor adjustment.*

## Section II. CARRIER ENGINE COOLING SYSTEM

### . General

The carrier engine cooling system consists
a radiator, water pump, fan, and necessary connecting lines and fittings. Thermostats automatically maintain the correct engine temperature under normal operating conditions. In

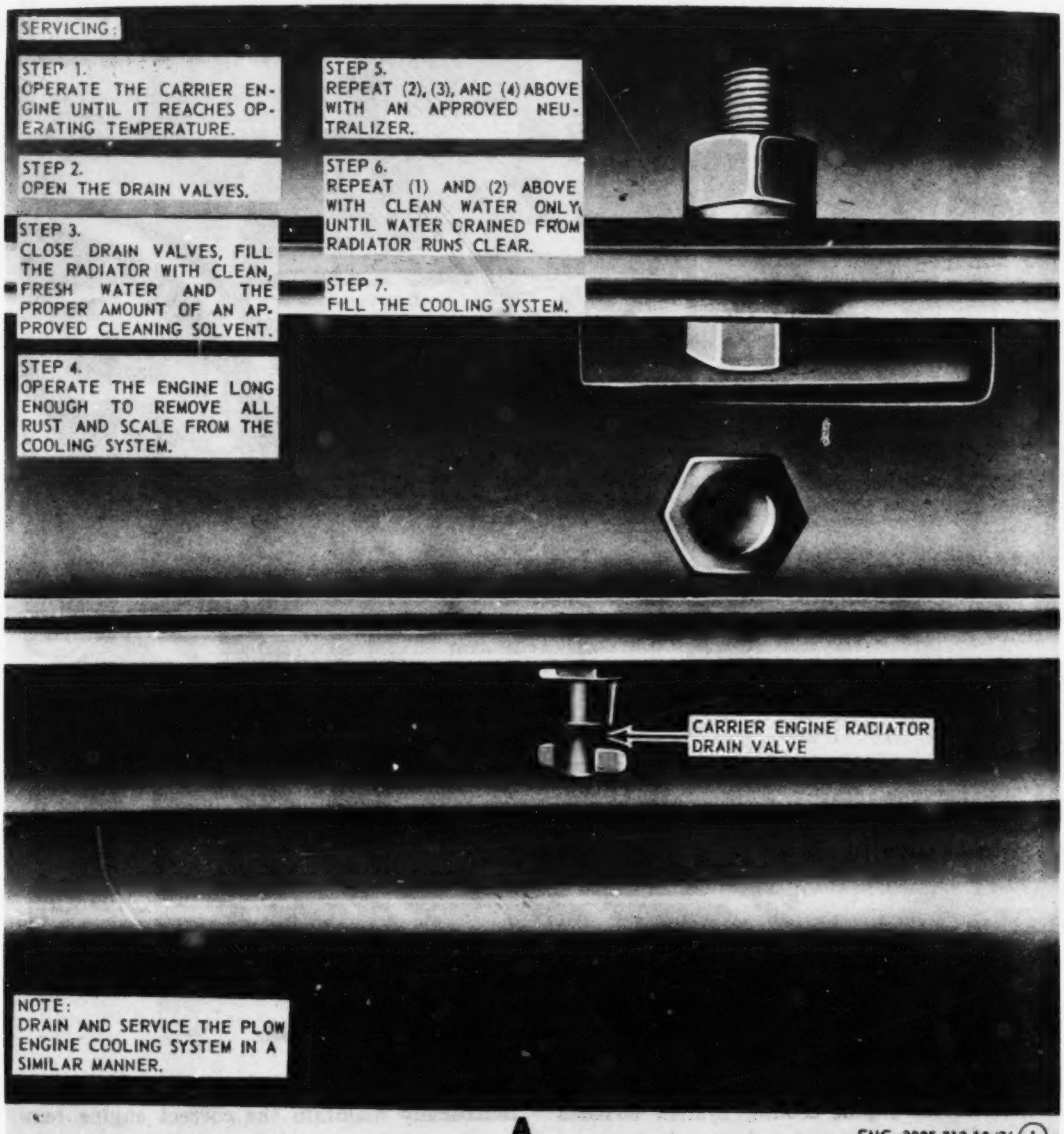
extreme cold weather coolant is circulated through the engine heaters to preheat the coolant as an aid in starting.

## 77. Carrier Engine Radiator Service

Service carrier engine radiator as illustrated in figure 36.

## 78. Carrier Engine Fan Belt Adjustment

Adjust carrier engine fan belt as illustrated in figure 37.



SERVICING:

STEP 1.
OPERATE THE CARRIER ENGINE UNTIL IT REACHES OPERATING TEMPERATURE.

STEP 2.
OPEN THE DRAIN VALVES.

STEP 3.
CLOSE DRAIN VALVES, FILL THE RADIATOR WITH CLEAN, FRESH WATER AND THE PROPER AMOUNT OF AN APPROVED CLEANING SOLVENT.

STEP 4.
OPERATE THE ENGINE LONG ENOUGH TO REMOVE ALL RUST AND SCALE FROM THE COOLING SYSTEM.

STEP 5.
REPEAT (2), (3), AND (4) ABOVE WITH AN APPROVED NEUTRALIZER.

STEP 6.
REPEAT (1) AND (2) ABOVE WITH CLEAN WATER ONLY UNTIL WATER DRAINED FROM RADIATOR RUNS CLEAR.

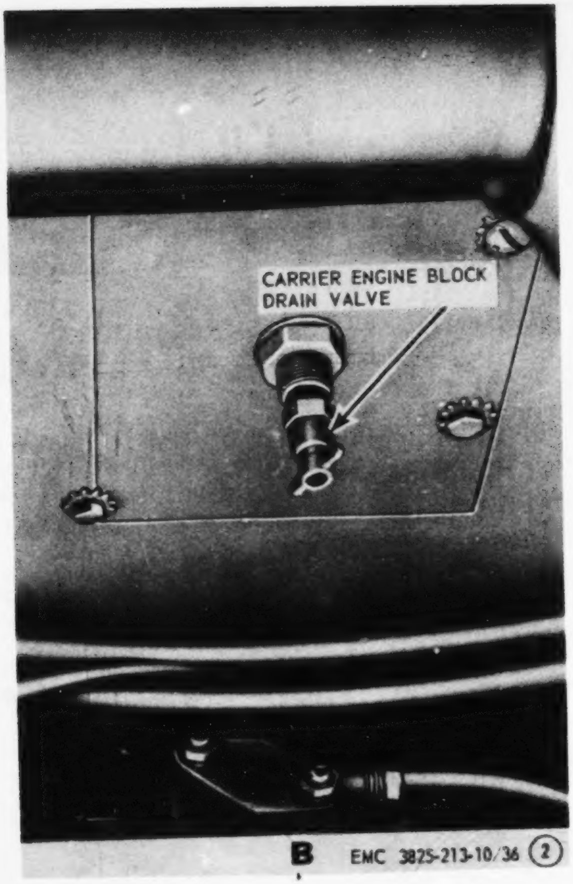
STEP 7.
FILL THE COOLING SYSTEM.

NOTE:
DRAIN AND SERVICE THE PLOW ENGINE COOLING SYSTEM IN A SIMILAR MANNER.

EMC 3895-213-10/36 ①

A. Carrier engine radiator draining

*Figure 36. Carrier and plow engine radiator and block service.*


CARRIER ENGINE BLOCK DRAIN VALVE
B
EMC 3825-213-10/36 ②

B. Carrier engine block draining

*Figure 36*—Continued.

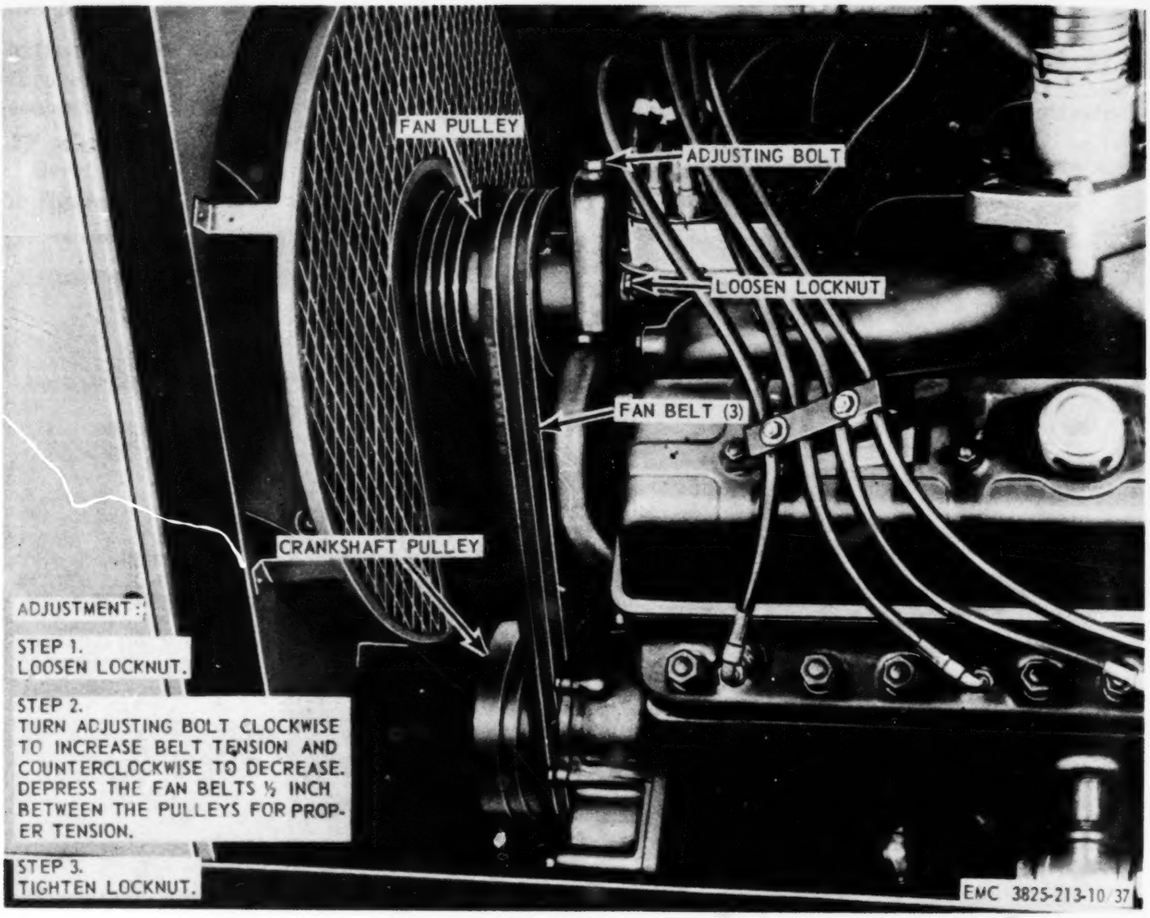

FAN PULLEY
ADJUSTING BOLT
LOOSEN LOCKNUT
FAN BELT (3)
CRANKSHAFT PULLEY
ADJUSTMENT:
STEP 1.
LOOSEN LOCKNUT.
STEP 2.
TURN ADJUSTING BOLT CLOCKWISE TO INCREASE BELT TENSION AND COUNTERCLOCKWISE TO DECREASE. DEPRESS THE FAN BELTS ½ INCH BETWEEN THE PULLEYS FOR PROPER TENSION.
STEP 3.
TIGHTEN LOCKNUT.
EMC 3825-213-10/37

*Figure 37. Carrier and plow engine fan belt adjustment.*

## Section III. CARRIER ENGINE HEATER FUEL SYSTEM

### 79. General

The carrier engine heater fuel system assembly consists of a fuel pump and fuel filter. Fuel is pumped from the carrier fuel tank through the filter to the carrier heater.

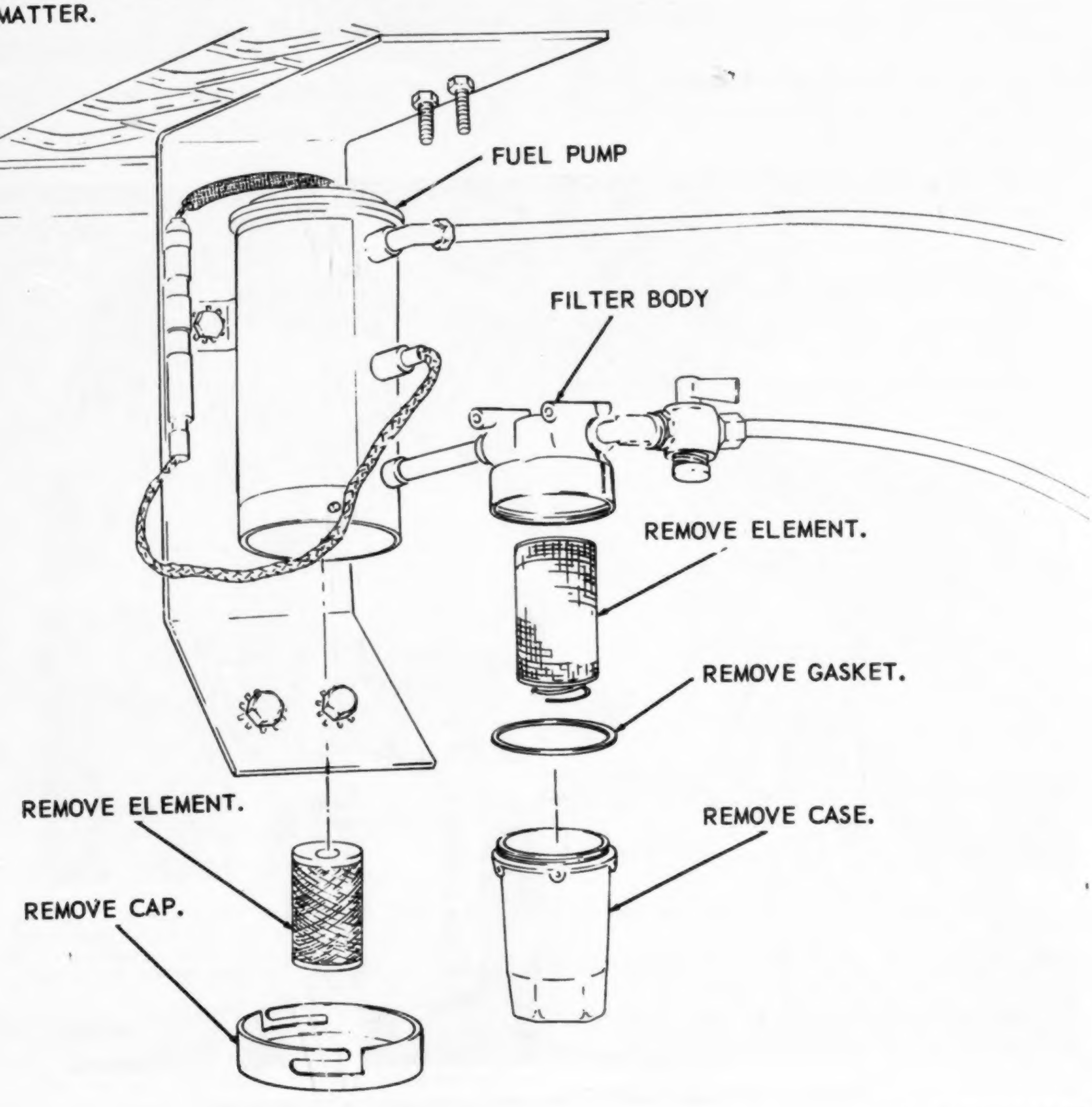
### 80. Carrier Engine Heater Fuel Filter Service

Service carrier engine heater fuel filter as illustrated in figure 38.

### 81. Carrier Engine Heater Fuel Pump Service

Service carrier engine heater fuel pump as illustrated in figure 38.

SERVICE:
VASH ELEMENTS IN AN APPROVED CLEANING SOLVENT AND DRY WITH COMPRESSED AIR. CLEAN FILTER CASE AND PUMP CAP OF FOREIGN MATTER.


FUEL PUMP
FILTER BODY
REMOVE ELEMENT.
REMOVE GASKET.
REMOVE CASE.
REMOVE ELEMENT.
REMOVE CAP.

EMC 3825-213-10/38

*Figure 38. Carrier and plow engine heater fuel filter and pump service.*

## Section IV. CARRIER AIR AND HANDBRAKE SYSTEM

### 82. General

Brakes of the carrier are actuated by compressed air supplied, through lines and fittings, from the air reservoirs. A compressor, mounted on the carrier engine, maintains pressure in the reservoirs.

### 83. Air Compressor Breather Service

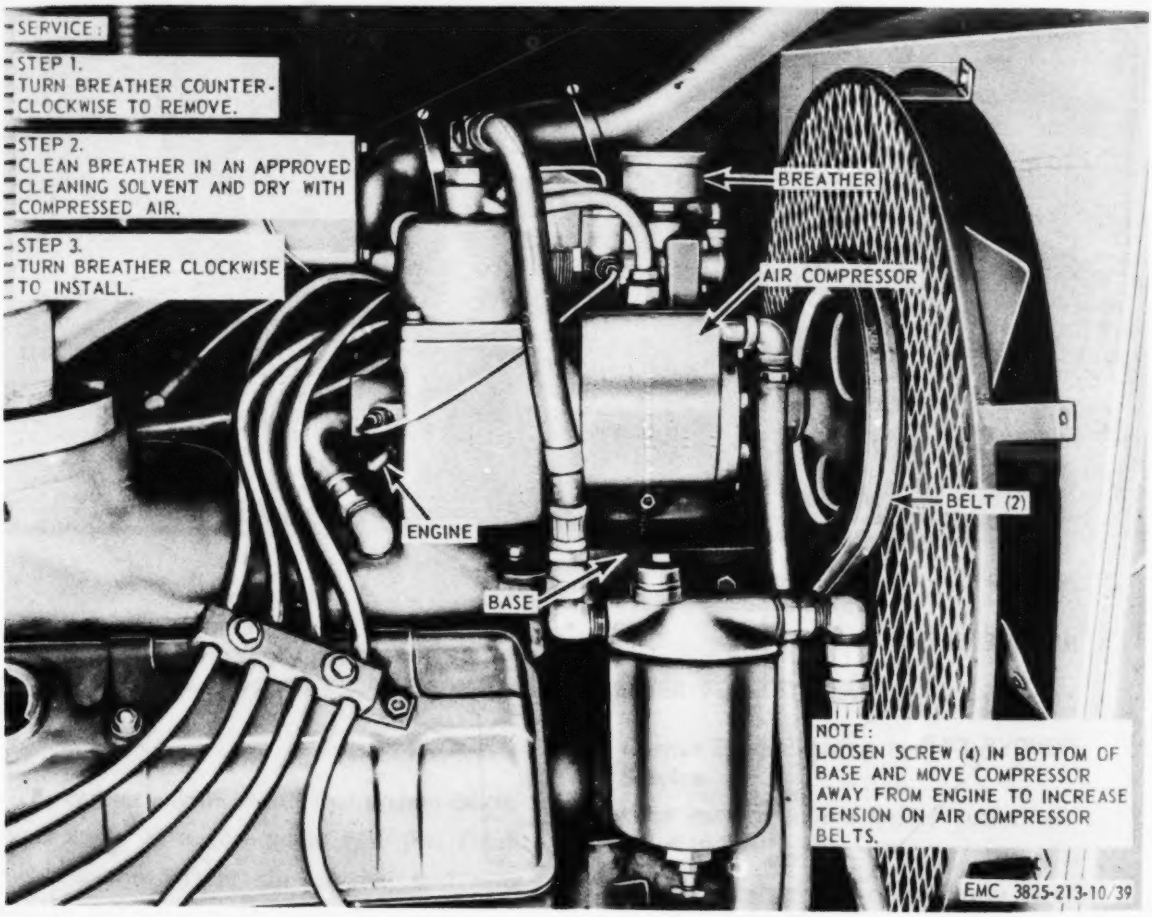
Service air compressor breather as illustrated in figure 39.

### 84. Air Compressor Drive Belts Adjustment

Adjust air compressor drive belts as illustrated in figure 39.

### 85. Handbrake Adjustment

Adjust handbrake as illustrated in figure 40.



SERVICE:

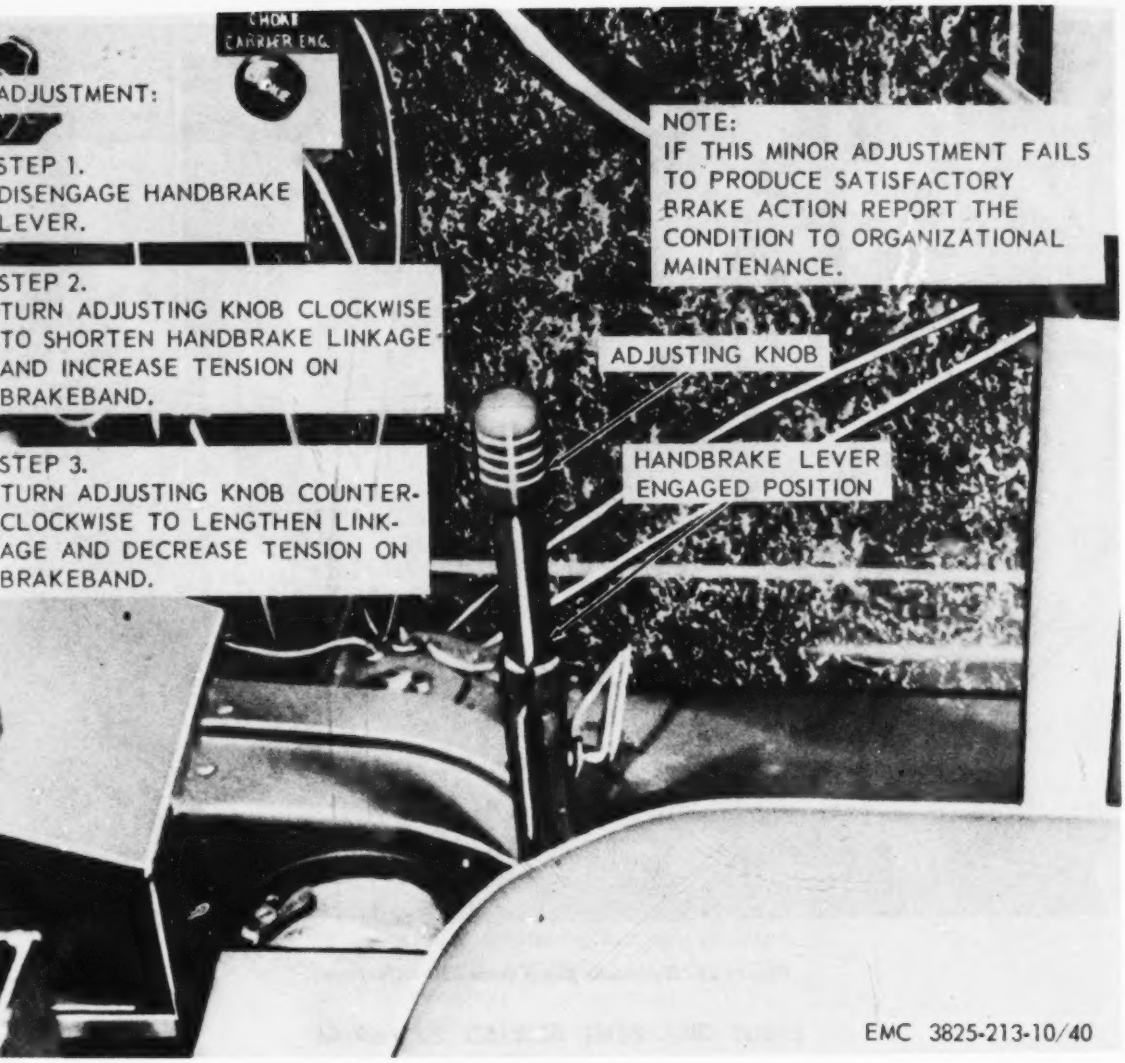
STEP 1.
TURN BREATHER COUNTER-CLOCKWISE TO REMOVE.

STEP 2.
CLEAN BREATHER IN AN APPROVED CLEANING SOLVENT AND DRY WITH COMPRESSED AIR.

STEP 3.
TURN BREATHER CLOCKWISE TO INSTALL.

NOTE:
LOOSEN SCREW (4) IN BOTTOM OF BASE AND MOVE COMPRESSOR AWAY FROM ENGINE TO INCREASE TENSION ON AIR COMPRESSOR BELTS.

*Figure 39. Air compressor breather service and drive belt adjustment.*



ADJUSTMENT:

STEP 1.
DISENGAGE HANDBRAKE
LEVER.

STEP 2.
TURN ADJUSTING KNOB CLOCKWISE
TO SHORTEN HANDBRAKE LINKAGE
AND INCREASE TENSION ON
BRAKEBAND.

STEP 3.
TURN ADJUSTING KNOB COUNTER-
CLOCKWISE TO LENGTHEN LINK-
AGE AND DECREASE TENSION ON
BRAKEBAND.

NOTE:
IF THIS MINOR ADJUSTMENT FAILS
TO PRODUCE SATISFACTORY
BRAKE ACTION REPORT THE
CONDITION TO ORGANIZATIONAL
MAINTENANCE.

*Figure 40. Handbrake adjustment.*

## Section V. CARRIER HYDRAULIC SYSTEM

### 36. General

The carrier hydraulic system consists of a ydraulic pump, which supplies power to both he carrier hydraulic system and the plow hyraulic system, a steering hydraulic tank and ilter. The carrier hydraulic system operates he rear axle steering and also supplies aid in teering the front axle.

### 87. Hydraulic Pump Belt Adjustment

Adjust hydraulic pump drive belt as illustrated in figure 41.

### 88. Carrier Steering Hydraulic Oil Filter Service

Service carrier steering hydraulic oil filter as illustrated in figure 42.

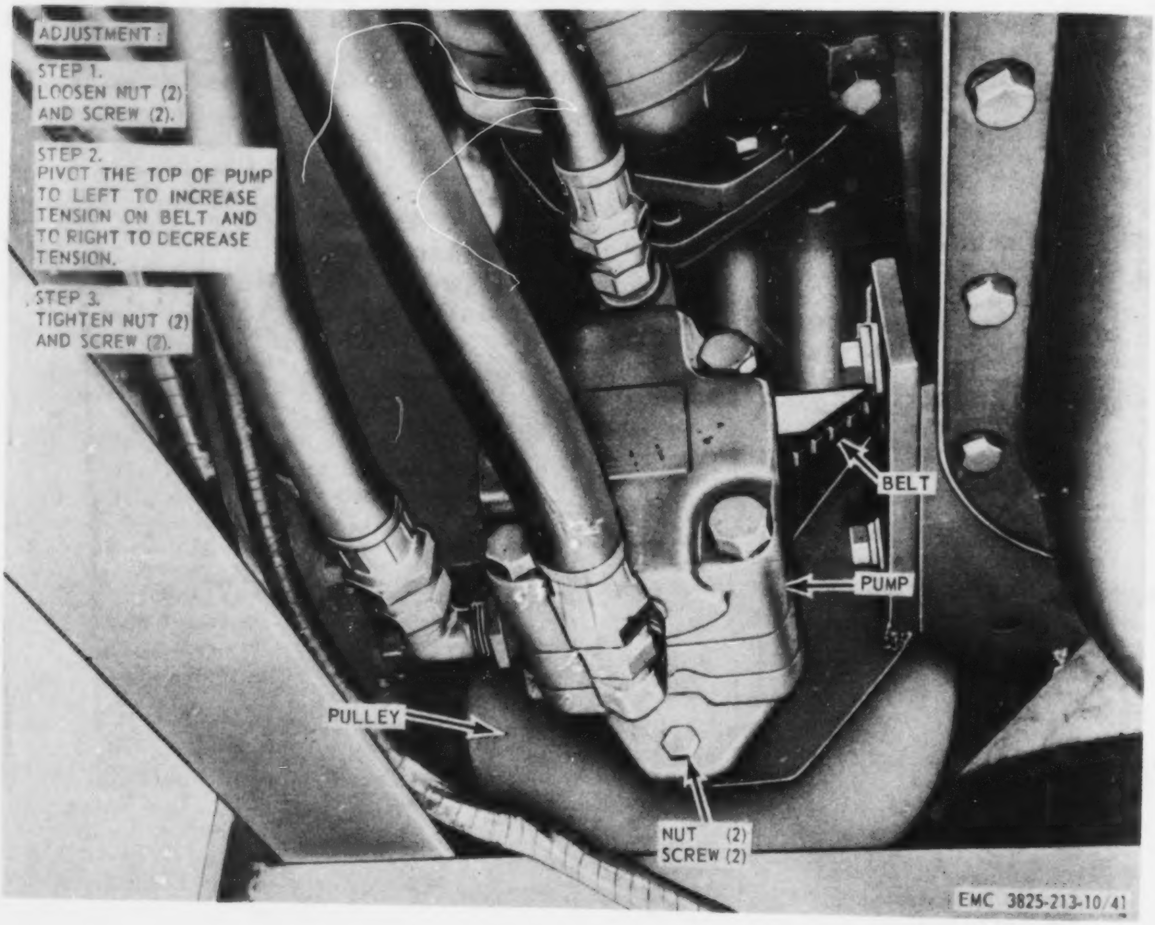

ADJUSTMENT:
STEP 1.
LOOSEN NUT (2)
AND SCREW (2).
STEP 2.
PIVOT THE TOP OF PUMP
TO LEFT TO INCREASE
TENSION ON BELT AND
TO RIGHT TO DECREASE
TENSION.
STEP 3.
TIGHTEN NUT (2)
AND SCREW (2).
BELT
PUMP
PULLEY
NUT (2)
SCREW (2)
EMC 3825-213-10/41

*Figure 41. Hydraulic pump drive belt adjustment.*

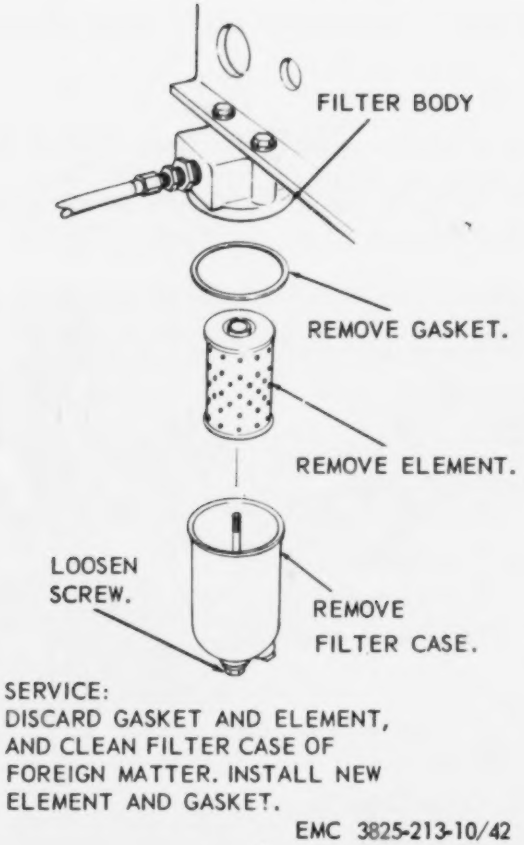

FILTER BODY
REMOVE GASKET.
REMOVE ELEMENT.
LOOSEN SCREW.
REMOVE FILTER CASE.
SERVICE:
DISCARD GASKET AND ELEMENT, AND CLEAN FILTER CASE OF FOREIGN MATTER. INSTALL NEW ELEMENT AND GASKET.
EMC 3825-213-10/42

*Figure 42. Carrier steering hydraulic oil filter service.*

## Section VI. CARRIER TIRES AND TUBES

### 89. General

The five tires of the snow removal unit are size 14:00 x 24, military type, having high traction, nondirectional tread.

### 90. Carrier Tires and Tubes

*a. Inspection.* Inspect the tires for cuts and bruises. A bruise will show a slight bulge in the tire. Report any cuts or bruises to organizational maintenance.

*b. Service.* Inflate the tires to 90 pounds per square inch (fig. 30).

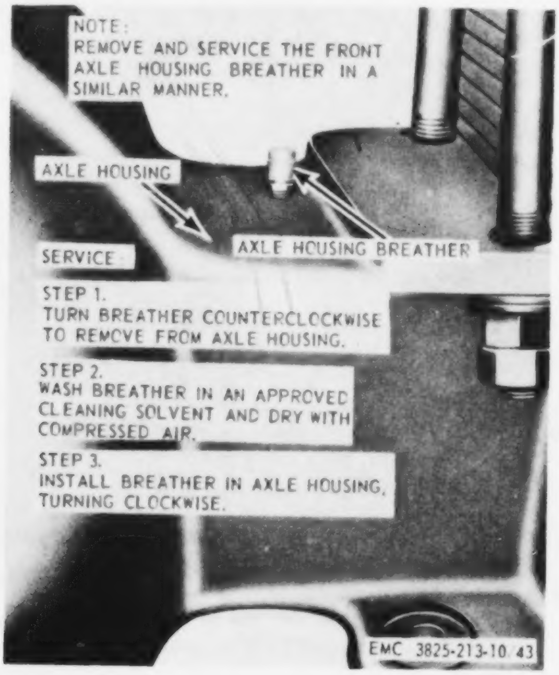
## Section VII. FRONT AND REAR AXLE VENTILATION SYSTEM

### 91. General

There are two ventilation breathers on the snow removal unit. One is located on the rear axle, top, right side, the other is on the front axle, top, left side. The breathers allow the escape of pressure built up within the axle housing.

### 92. Front and Rear Axle Ventilation Breather Service

Service the front and rear axle ventilation breathers as illustrated in figure 43.



NOTE:
REMOVE AND SERVICE THE FRONT AXLE HOUSING BREATHER IN A SIMILAR MANNER.

SERVICE

STEP 1.
TURN BREATHER COUNTERCLOCKWISE TO REMOVE FROM AXLE HOUSING.

STEP 2.
WASH BREATHER IN AN APPROVED CLEANING SOLVENT AND DRY WITH COMPRESSED AIR.

STEP 3.
INSTALL BREATHER IN AXLE HOUSING, TURNING CLOCKWISE.

*Figure 43. Front and rear axle ventilation breather service.*

# CHAPTER 5

# SNOWPLOW MAINTENANCE INSTRUCTIONS

## Section I. PLOW ENGINE FUEL SYSTEM

### 93. General

The plow engine fuel system consists of a plow engine fuel tank, two fuel pumps, fuel filter, and air cleaner. The following paragraphs describe and illustrate the maintenance functions to be performed by the operator for the plow engine fuel system.

### 94. Plow Engine Fuel Tank Service

Service plow engine fuel tank (fig. 31).

### 95. Plow Engine Fuel Filter Service

Service plow engine fuel filter (fig. 32).

### 96. Plow Engine Fuel Pump Service

Service plow engine fuel pump (fig. 34).

### 97. Plow Engine Air Cleaner Service

Service plow engine air cleaner (fig. 33).

### 98. Plow Engine Carburetor Adjustment

Adjust plow engine carburetor (fig. 35).

## Section II. PLOW ENGINE COOLING SYSTEM

### 99. General

The plow engine cooling system consists of a radiator, water pump, fan, and necessary connecting lines and fittings. Thermostats automatically maintain the most desirable engine temperature under normal operating conditions. In extreme cold weather coolant is circulated through the engine heaters to preheat the coolant to aid in starting.

### 100. Plow Engine Radiator Service

Service plow engine radiator (fig. 36).

### 101. Plow Engine Fan Belt Adjustment

Adjust plow engine fan belt (fig. 37).

## Section III. PLOW ENGINE HEATER FUEL SYSTEM

### 102. General

The plow engine heater fuel system consists of a fuel pump and fuel filter. Fuel is pumped from the plow fuel tank through the filter to the plow heater.

### 103. Plow Engine Heater Fuel Filter Service

Service plow engine heater fuel filter (fig. 38).

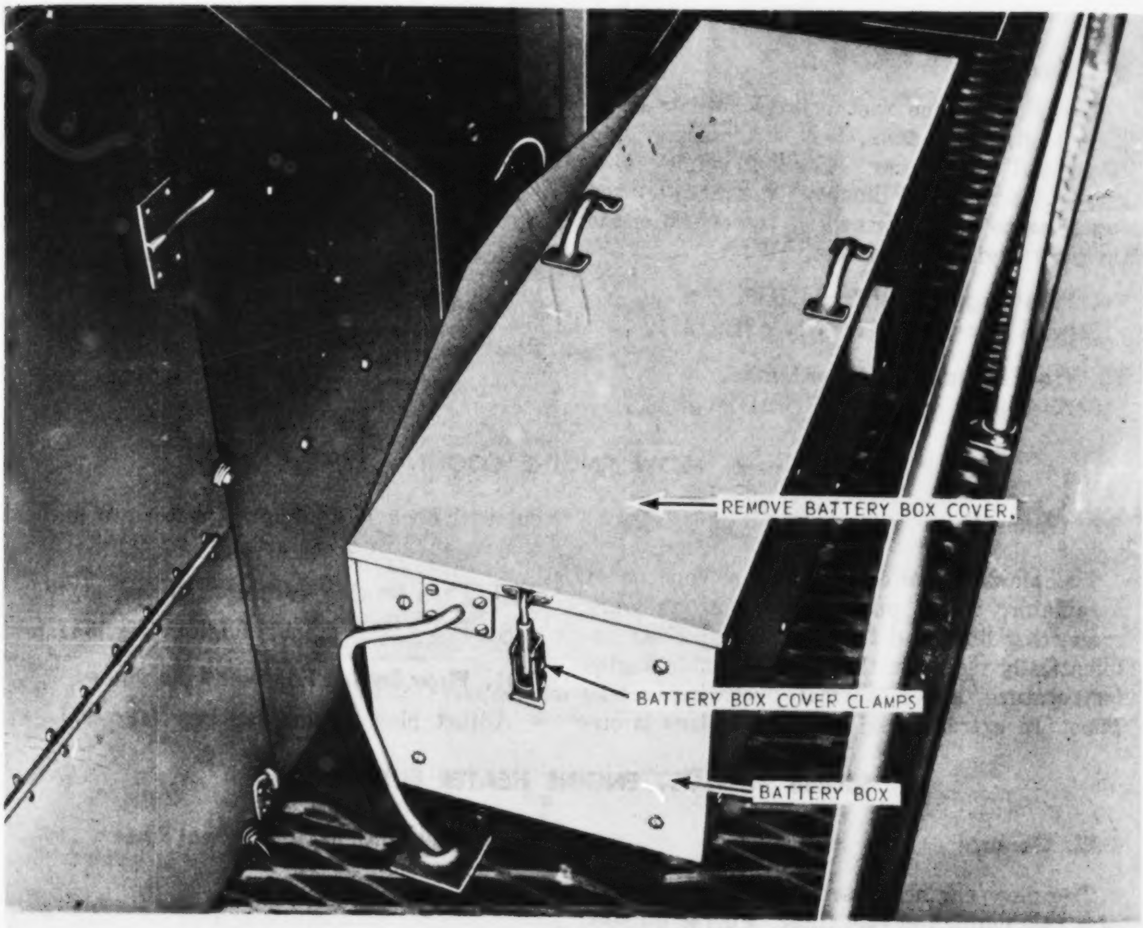
## Section IV. CARRIER AND PLOW ELECTRICAL SYSTEM

### 104. General

The electrical system, which operates on 24 volts supplied by four 12-volt batteries, consists of a starter motor and a distributor. The carrier engine is supplied with an alternator which keeps the batteries charged when the unit is in operation. The following paragraphs describe and illustrate the maintenance functions to be performed by the operator for the carrier and plow electrical system.

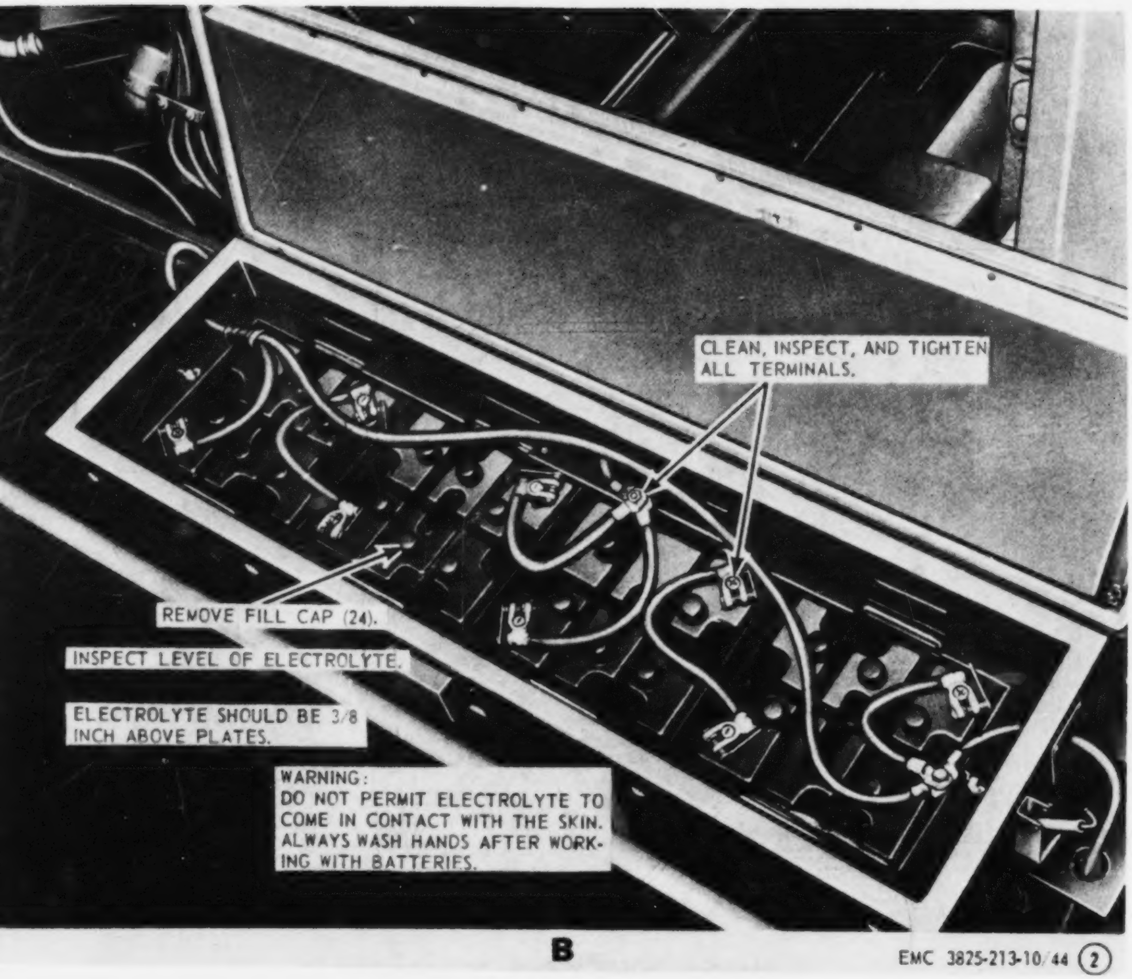
### 105. Batteries Service

Service batteries as illustrated in figure 44.


REMOVE BATTERY BOX COVER.
BATTERY BOX COVER CLAMPS
BATTERY BOX
A
EMC 3825-213-10/44 ①

A. Battery box cover removal and installation

*Figure 44. Battery box cover removal and installation and batteries service.*


CLEAN, INSPECT, AND TIGHTEN ALL TERMINALS.
REMOVE FILL CAP (24).
INSPECT LEVEL OF ELECTROLYTE.
ELECTROLYTE SHOULD BE 3/8 INCH ABOVE PLATES.
WARNING: DO NOT PERMIT ELECTROLYTE TO COME IN CONTACT WITH THE SKIN. ALWAYS WASH HANDS AFTER WORKING WITH BATTERIES.
B
EMC 3825-213-10/44 ②

B. Battery service

*Figure 44*—Continued.

## 106. Alternator Belts Adjustment

Adjust alternator belts as illustrated in figure 45.

## 107. Instrument Panel Lamps

Replace panel lamps as illustrated in figure 46.

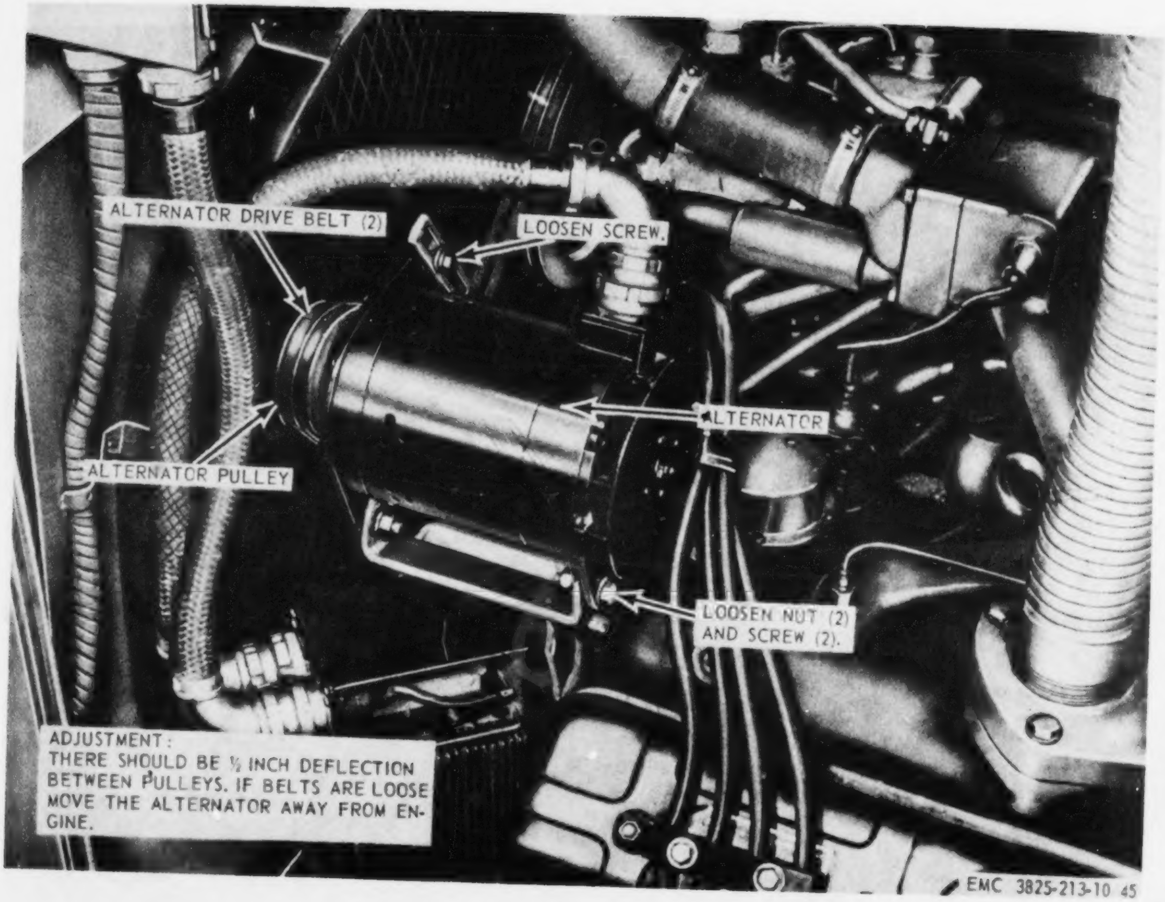

ALTERNATOR DRIVE BELT (2)
LOOSEN SCREW.
ALTERNATOR
ALTERNATOR PULLEY
LOOSEN NUT (2) AND SCREW (2).
ADJUSTMENT:
THERE SHOULD BE ½ INCH DEFLECTION BETWEEN PULLEYS. IF BELTS ARE LOOSE MOVE THE ALTERNATOR AWAY FROM ENGINE.
EMC 3825-213-10 45

*Figure 45. Alternator drive belts adjustment.*

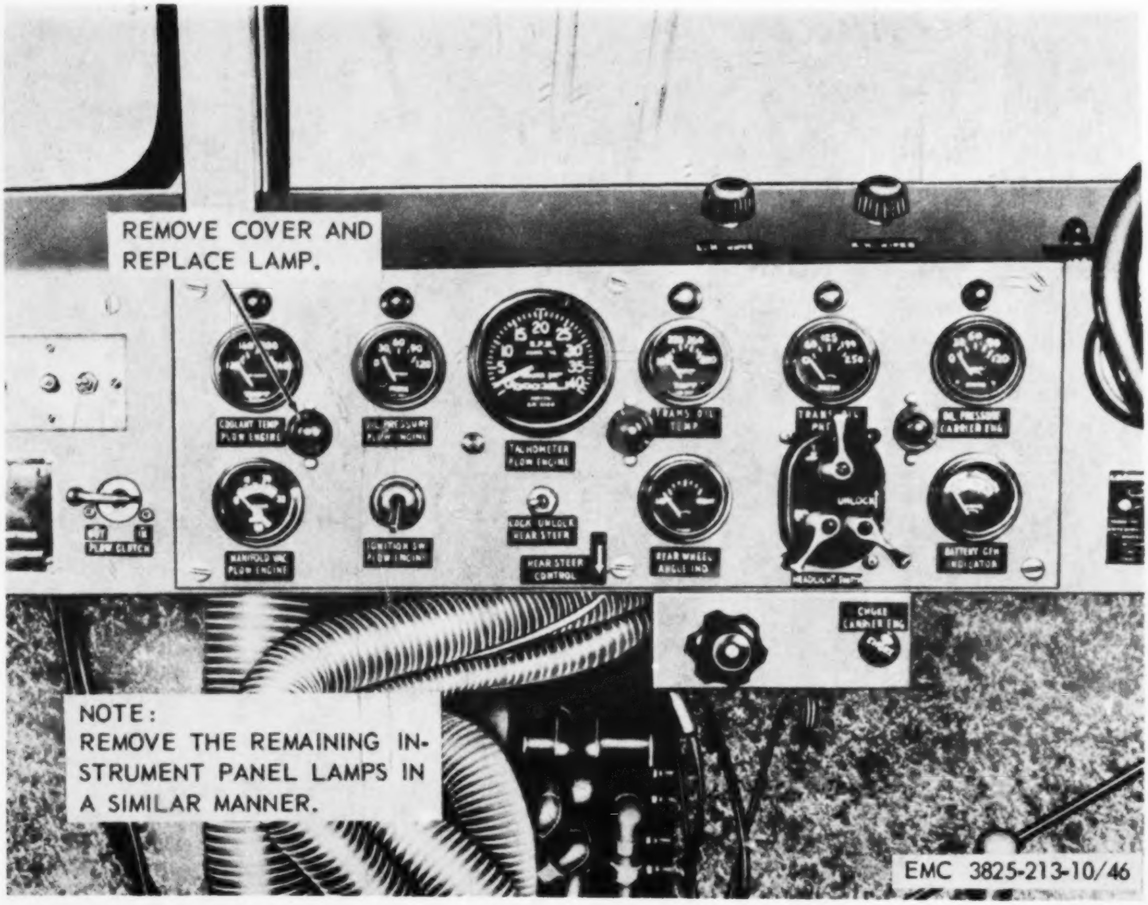

REMOVE COVER AND REPLACE LAMP.
COOLANT TEMP PLOW ENGINE
OIL PRESSURE PLOW ENGINE
TACHOMETER PLOW ENGINE
TRANS OIL TEMP
OIL PRESSURE CARRIER ENG
MANIFOLD VAC PLOW ENGINE
IGNITION SW PLOW ENGINE
PLOW CLUTCH
LOCK UNLOCK REAR STEER
REAR STEER CONTROL
REAR WHEEL ANGLE IND
UNLOCK
HEADLIGHT SWITCH
BATTERY GEN INDICATOR
CHOKE CARRIER ENG
NOTE:
REMOVE THE REMAINING INSTRUMENT PANEL LAMPS IN A SIMILAR MANNER.
EMC 3825-213-10/46

*Figure 46. Instrument panel lamps removal and installation.*

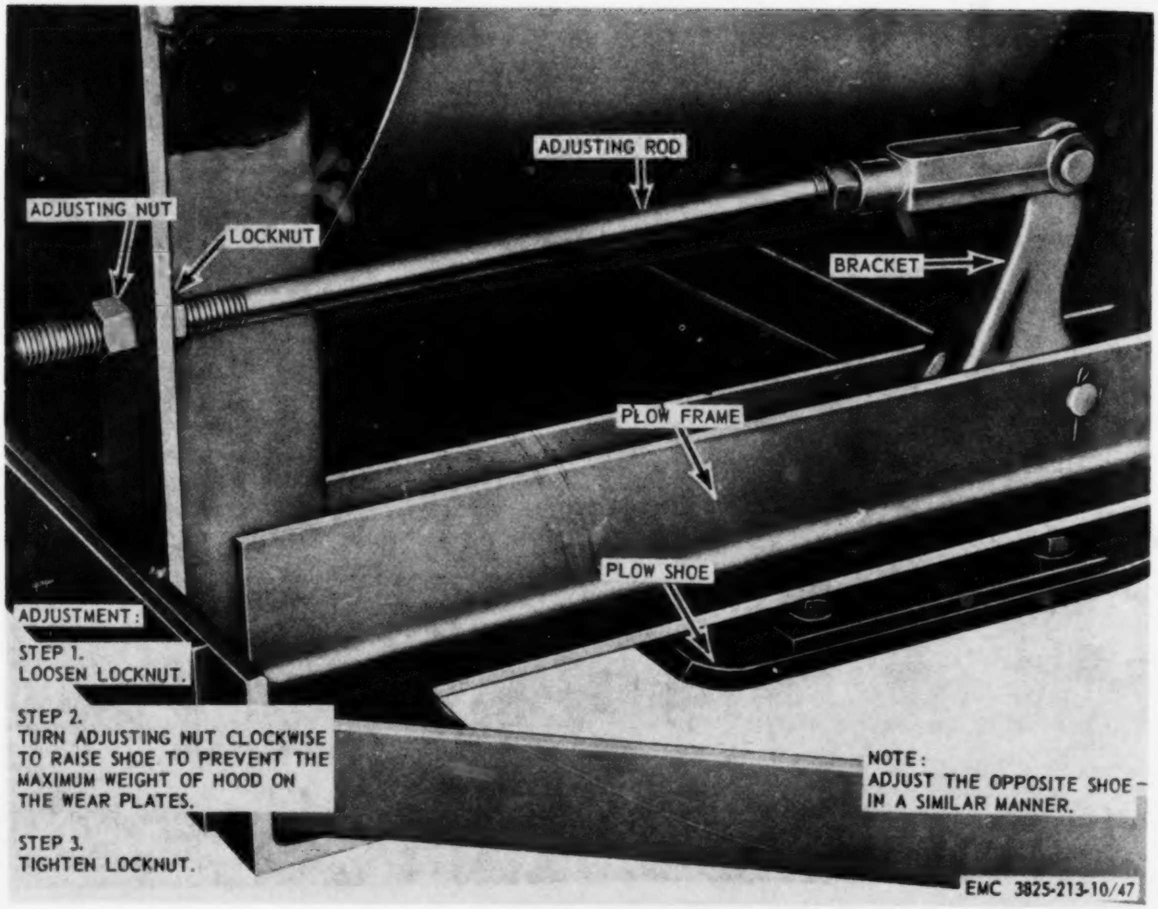
## Section V. PLOW SHOE ASSEMBLY

### 108. General

The plow shoe assembly consists of the plow shoe and adjusting bracket. This section describes and illustrates the maintenance functions to be performed by the operator for the plow shoe assembly.

### 109. Plow Shoe Assembly Adjustment

Adjust plow shoe assembly as illustrated in figure 47.


ADJUSTING ROD
ADJUSTING NUT
LOCKNUT
BRACKET
PLOW FRAME
PLOW SHOE
EMC 3825-213-10/47

ADJUSTMENT:

STEP 1.
LOOSEN LOCKNUT.

STEP 2.
TURN ADJUSTING NUT CLOCKWISE TO RAISE SHOE TO PREVENT THE MAXIMUM WEIGHT OF HOOD ON THE WEAR PLATES.

STEP 3.
TIGHTEN LOCKNUT.

NOTE:
ADJUST THE OPPOSITE SHOE IN A SIMILAR MANNER.

*Figure 47. Plow shoe assembly adjustment.*

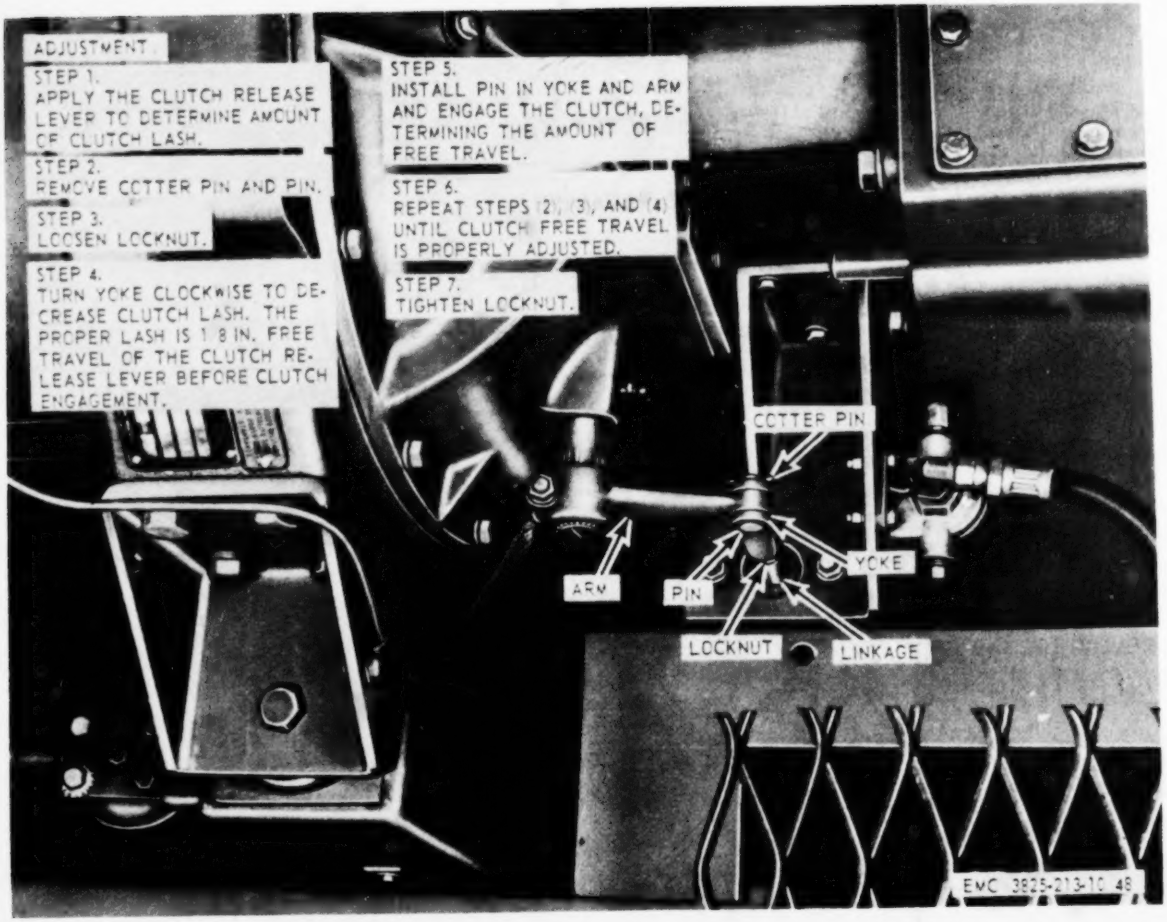
## Section VI. PLOW ENGINE CLUTCH ASSEMBLY

### 110. General

The plow engine clutch is air operated, controlled by a valve mounted within the carrier cab which actuates the clutch air chamber and linkage.

### 111. Plow Engine Clutch Adjustment

Adjust plow engine clutch as illustrated in figure 48.



ADJUSTMENT.

STEP 1.
APPLY THE CLUTCH RELEASE LEVER TO DETERMINE AMOUNT OF CLUTCH LASH.

STEP 2.
REMOVE COTTER PIN AND PIN.

STEP 3.
LOOSEN LOCKNUT.

STEP 4.
TURN YOKE CLOCKWISE TO DECREASE CLUTCH LASH. THE PROPER LASH IS 1/8 IN. FREE TRAVEL OF THE CLUTCH RELEASE LEVER BEFORE CLUTCH ENGAGEMENT.

STEP 5.
INSTALL PIN IN YOKE AND ARM AND ENGAGE THE CLUTCH, DETERMINING THE AMOUNT OF FREE TRAVEL.

STEP 6.
REPEAT STEPS (2), (3), AND (4) UNTIL CLUTCH FREE TRAVEL IS PROPERLY ADJUSTED.

STEP 7.
TIGHTEN LOCKNUT.

*Figure 48. Plow engine clutch adjustment.*

## Section VII. PLOW HYDRAULIC SYSTEM

### 112. General

The plow hydraulic system consists of a plow hydraulic tank and filters, and hydraulic cylinders to actuate the vertical movement of the plow assembly. A hydraulic motor operates the rotation of the plow chute.

### 113. Plow Hydraulic Tank Strainer Service

Service plow hydraulic tank strainer as illustrated in figure 49.

### 114. Plow Hydraulic Oil Filter Service

Service plow hydraulic oil filter as illustrated in figure 50.

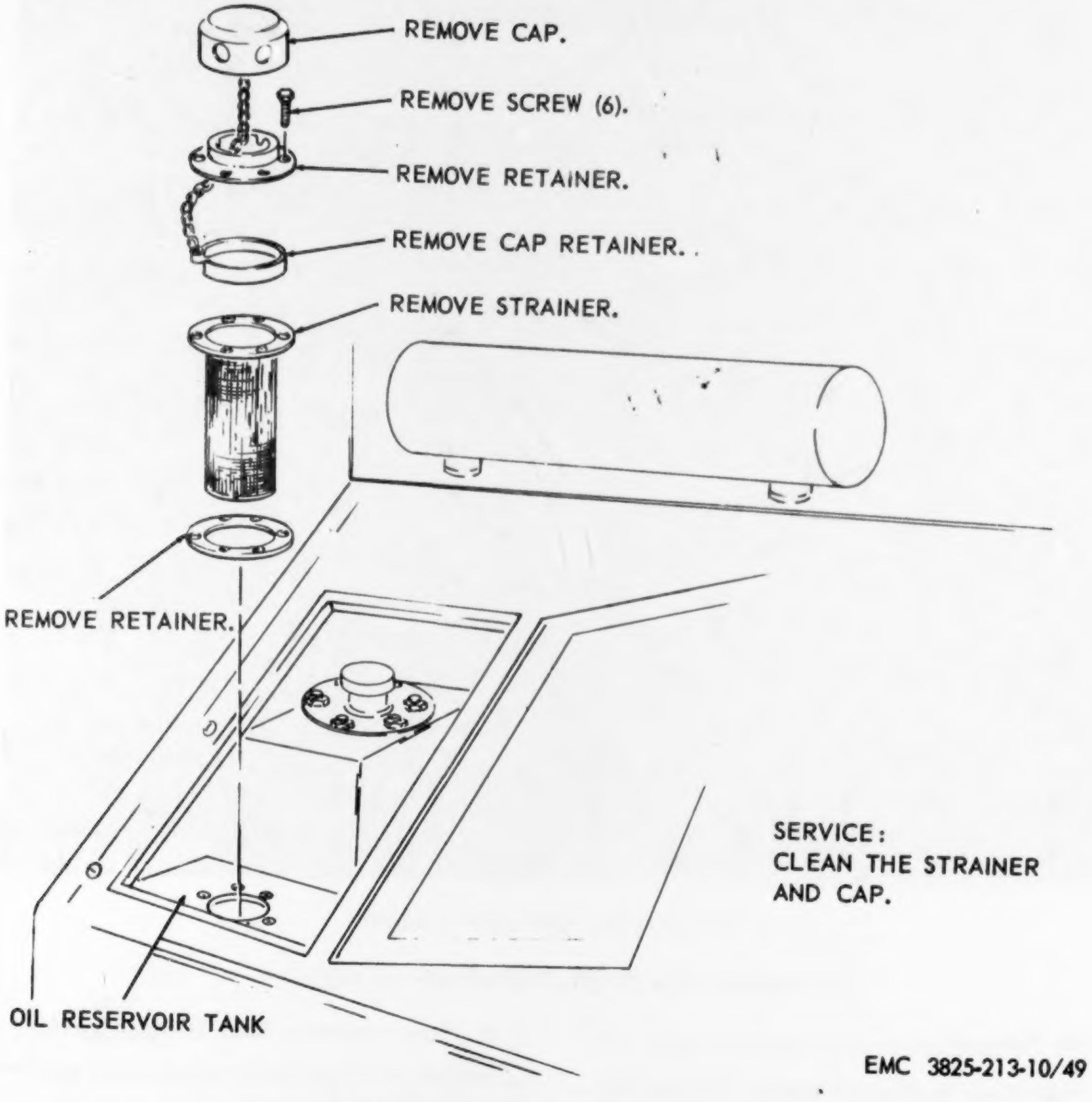
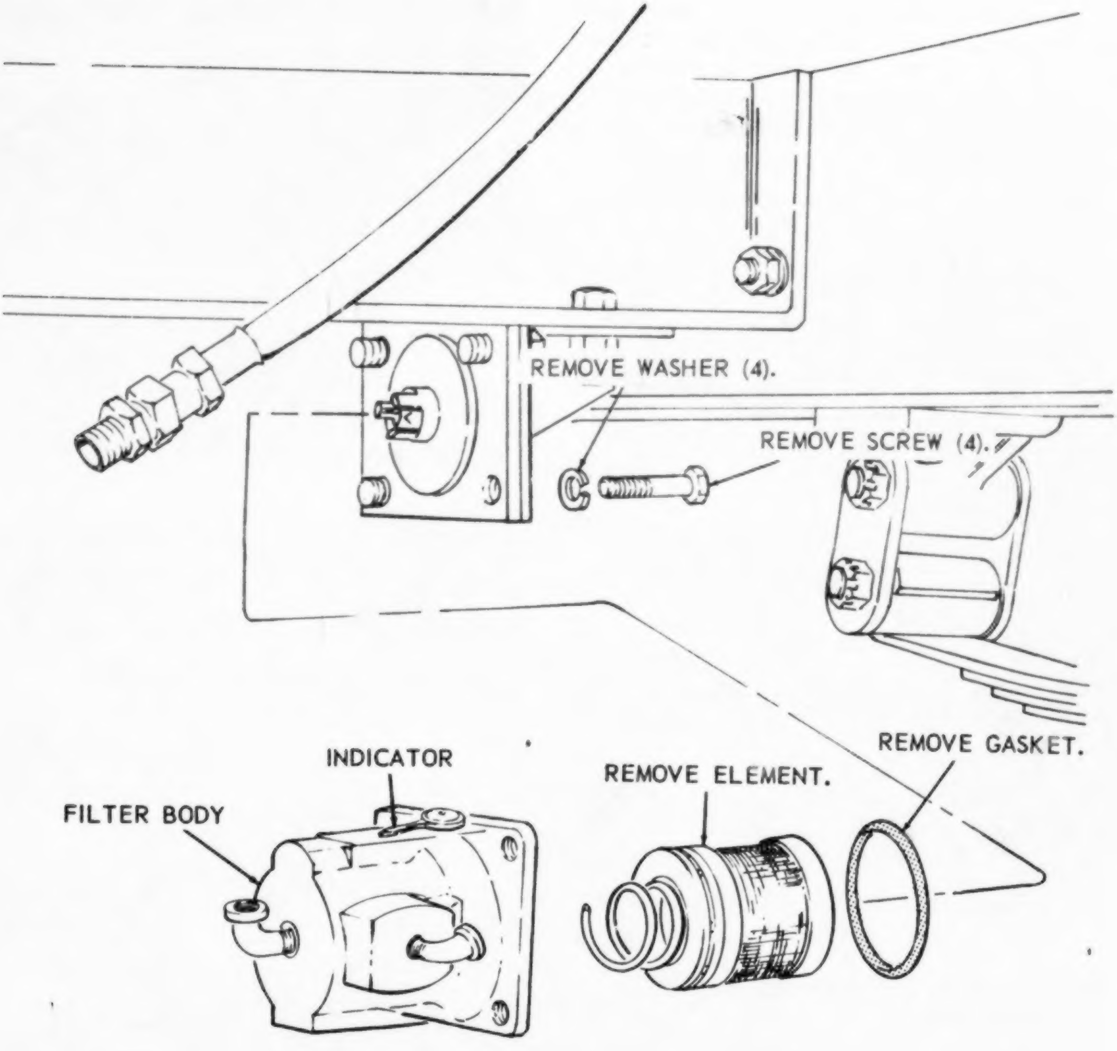

REMOVE CAP.
REMOVE SCREW (6).
REMOVE RETAINER.
REMOVE CAP RETAINER.
REMOVE STRAINER.
REMOVE RETAINER.
OIL RESERVOIR TANK
SERVICE:
CLEAN THE STRAINER AND CAP.
EMC 3825-213-10/49

*Figure 49. Plow hydraulic tank strainer service.*


REMOVE WASHER (4).
REMOVE SCREW (4).
INDICATOR
FILTER BODY
REMOVE ELEMENT.
REMOVE GASKET.

SERVICE:
WHEN INDICATOR SHOWS "CLEAN FILTER", REMOVE AND CLEAN ELEMENT AND FILTER BODY.

EMC 3825-213-10/50

*Figure 50. Plow hydraulic oil filter service.*

## Section VIII. FAN AND AUGER ASSEMBLY

### 115. General

This section describes and illustrates the maintenance functions to be performed by the operator for the fan and auger assemblies.

### 116. Auger Drive Shear Bolts Removal and Installation

Remove and install auger drive shear bolts as illustrated in figure 51.

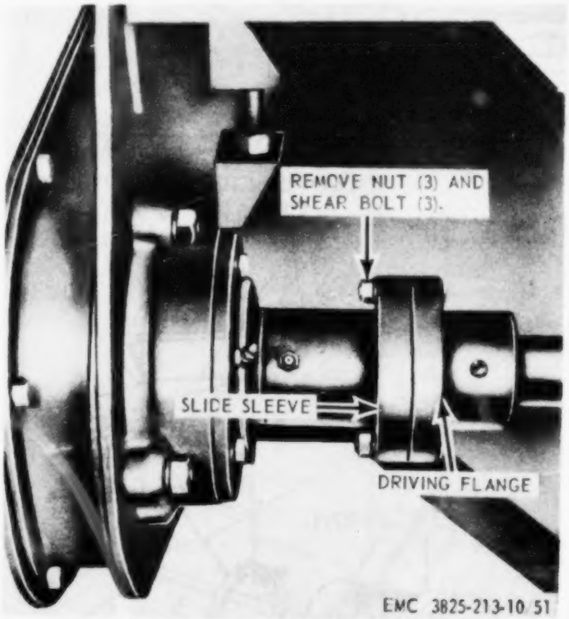

REMOVE NUT (3) AND SHEAR BOLT (3).
SLIDE SLEEVE
DRIVING FLANGE
EMC 3825-213-10 51

*Figure 51. Auger drive shear bolts removal and installation.*

### 117. Fan Shear Bolts Removal and Installation

Remove and install fan shear bolts as illustrated in figure 52.

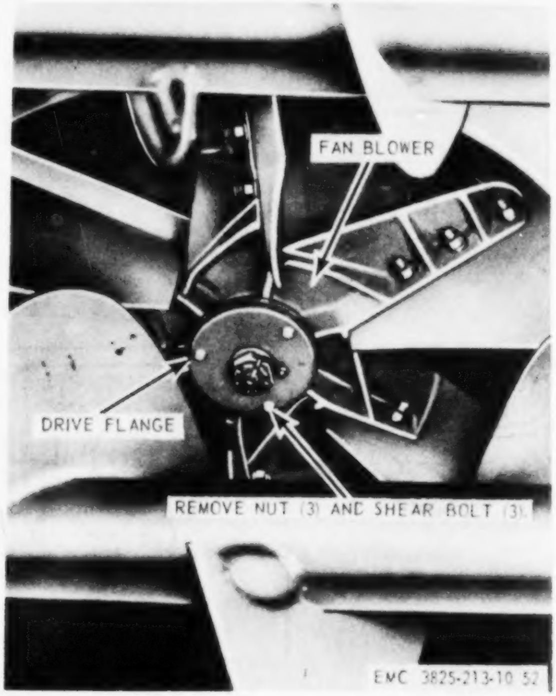

FAN BLOWER
DRIVE FLANGE
REMOVE NUT (3) AND SHEAR BOLT (3).
EMC 3825-213-10 52

*Figure 52. Fan shear bolts removal and installation.*

## Section IX. ACCESSORIES, COMPONENTS, AND ATTACHMENTS

### 118. General

This section describes and illustrates the services, adjustment, and maintenance functions to be performed by the operator for the cutter bar assembly and the carrier tire chains.

### 119. Snowplow Cutter Bar Assemblies

*a. Description.* The snowplow cutter bars serve as cutting knives for deep snow embankments. When the plow is moved into deep snow the cutter bars cut snow enbankments.

*b. Removal and Installation.* Remove and install the cutter bar assemblies as illustrated in figure 53.

## 120. Carrier Tire Chain

*a. Description.* The carrier tire chains are provided to give the unit more traction under icy conditions.

*b. Removal and Installation.* Remove and install the carrier tire chains as illustrated in figure 54.

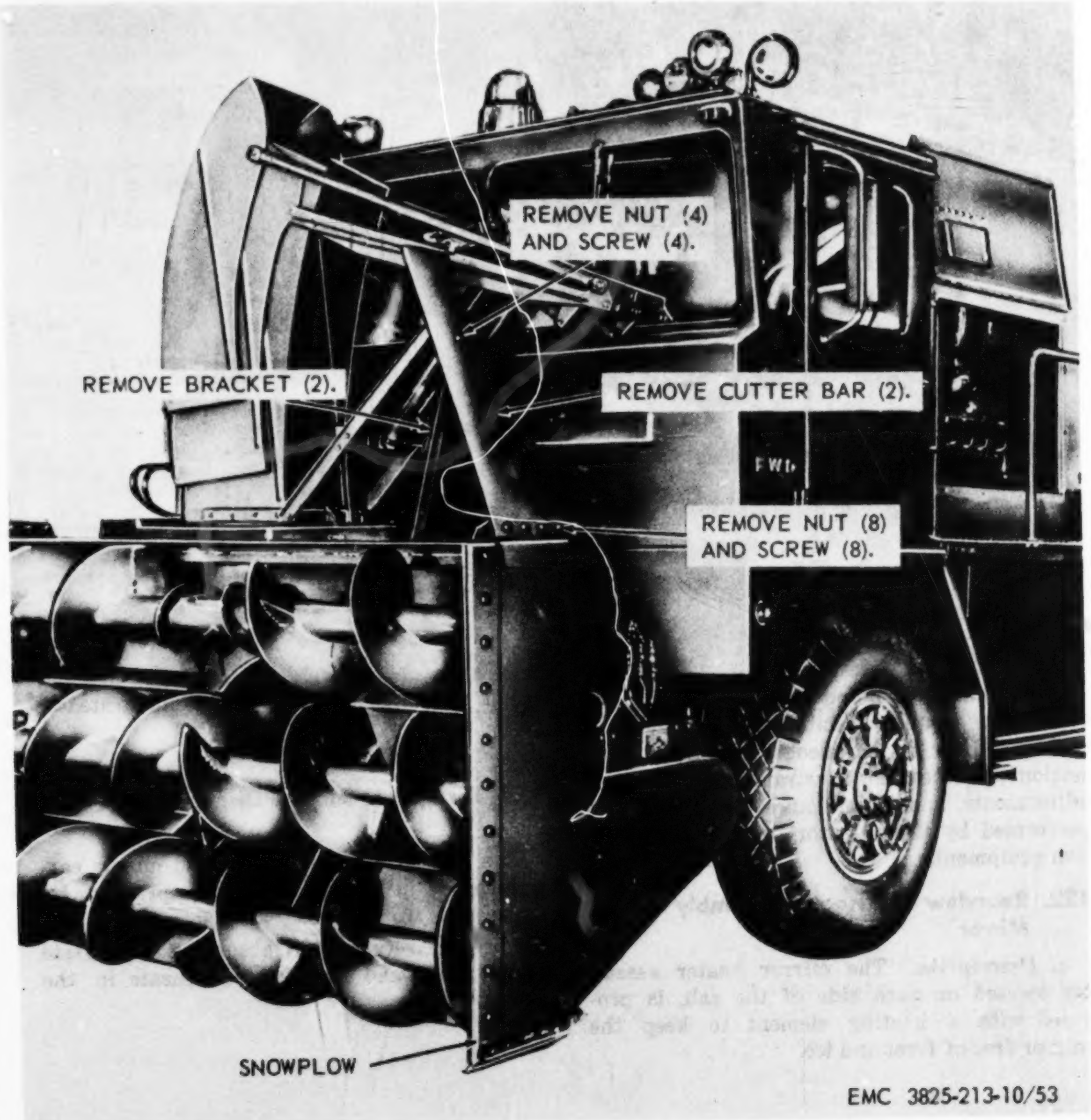
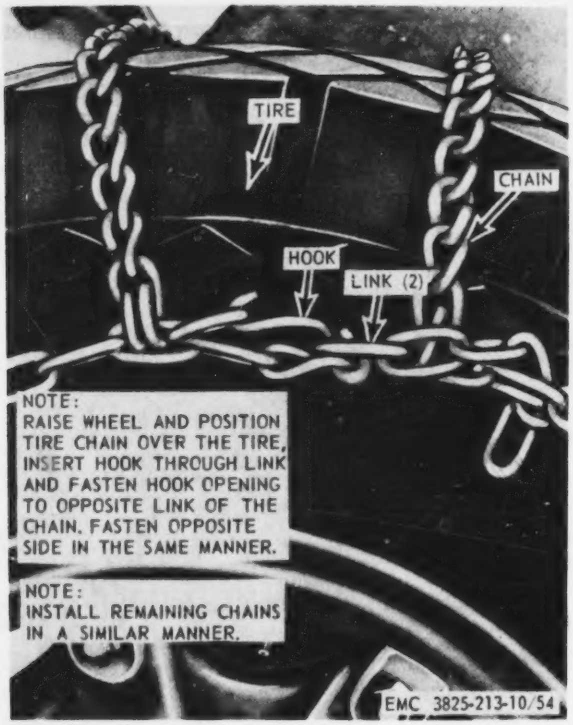

REMOVE NUT (4) AND SCREW (4).
REMOVE BRACKET (2).
REMOVE CUTTER BAR (2).
REMOVE NUT (8) AND SCREW (8).
SNOWPLOW
EMC 3825-213-10/53

*Figure 53. Snowplow cutter bars and brackets removal and installation.*



NOTE:
RAISE WHEEL AND POSITION TIRE CHAIN OVER THE TIRE, INSERT HOOK THROUGH LINK AND FASTEN HOOK OPENING TO OPPOSITE LINK OF THE CHAIN. FASTEN OPPOSITE SIDE IN THE SAME MANNER.

NOTE:
INSTALL REMAINING CHAINS IN A SIMILAR MANNER.

*Figure 54. Carrier tire chains removal and installation.*

## Section X. WINTERIZATION EQUIPMENT

### 121. General

The winterization equipment consists of the mirror heater assembly, transmission oil cooler, and air system alcohol dispenser. This section describes and illustrates the services, adjustments, and maintenance functions to be performed by the operator for the winterization equipment.

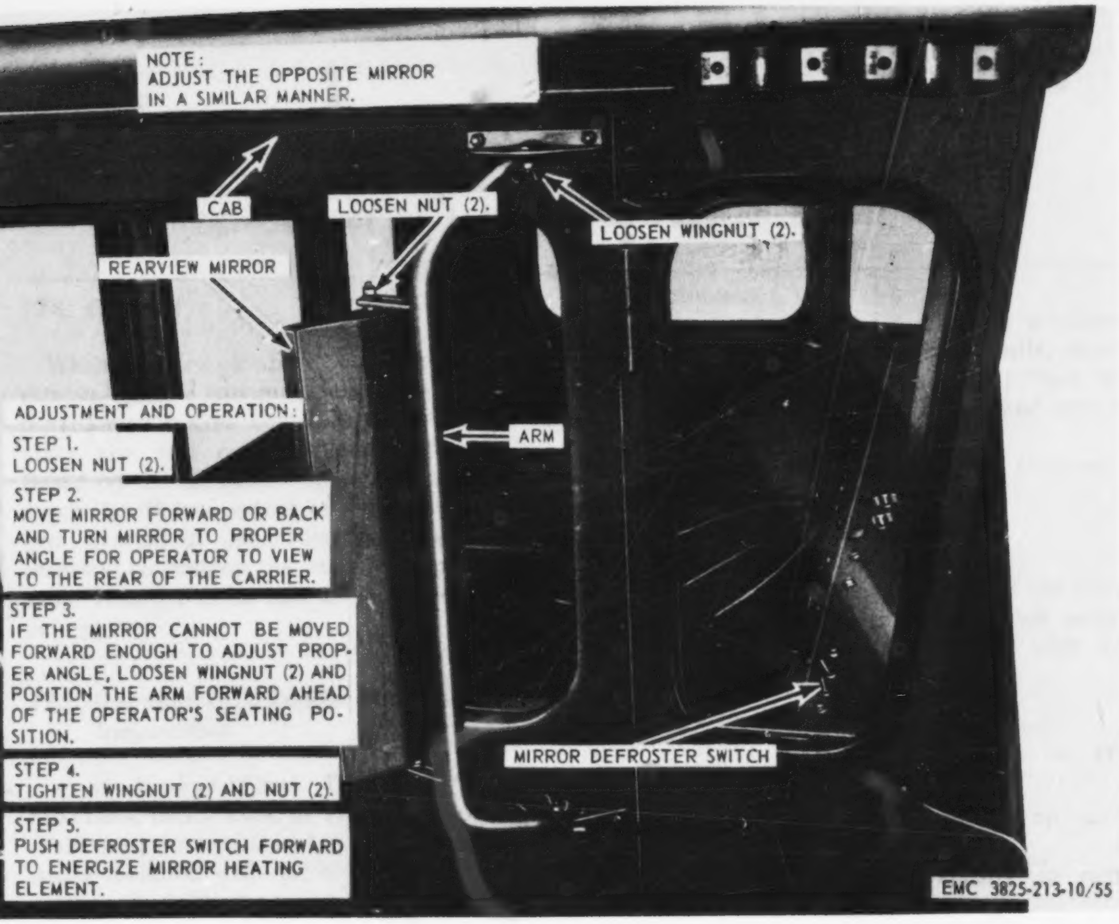
### 122. Rearview and Heater Assembly Mirror

*a. Description.* The mirror heater assembly located on each side of the cab, is provided with a heating element to keep the mirror free of frost and ice.

*b. Operation and Adjustment.* Operate and adjust mirror heater assembly as illustrated in figure 55.

### 123. Air System Alcohol Dispenser

The alcohol dispenser is located on the carrier engine just below the air compressor. Its purpose is to dispense alcohol into the air compressor return lines absorbing condensate in the lines and trapping condensate in the bowl.



NOTE:
ADJUST THE OPPOSITE MIRROR
IN A SIMILAR MANNER.

ADJUSTMENT AND OPERATION:

STEP 1.
LOOSEN NUT (2).

STEP 2.
MOVE MIRROR FORWARD OR BACK AND TURN MIRROR TO PROPER ANGLE FOR OPERATOR TO VIEW TO THE REAR OF THE CARRIER.

STEP 3.
IF THE MIRROR CANNOT BE MOVED FORWARD ENOUGH TO ADJUST PROPER ANGLE, LOOSEN WINGNUT (2) AND POSITION THE ARM FORWARD AHEAD OF THE OPERATOR'S SEATING POSITION.

STEP 4.
TIGHTEN WINGNUT (2) AND NUT (2).

STEP 5.
PUSH DEFROSTER SWITCH FORWARD TO ENERGIZE MIRROR HEATING ELEMENT.

CAB
LOOSEN NUT (2).
LOOSEN WINGNUT (2).
REARVIEW MIRROR
ARM
MIRROR DEFROSTER SWITCH
EMC 3825-213-10/55

*Figure 55. Rearview mirror adjustment and mirror heater operation.*

# CHAPTER 6

# DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

## 124. General

When capture or abandonment of the snow removal unit is imminent, the responsible unit commander makes the decision either to destroy the unit or to render it inoperative. Based on this decision, orders are issued which cover the desired extent of destruction. Whatever method of demolition is employed, it is essential to destroy the same vital parts of all snow removal units and all corresponding repair parts.

## 125. Demolition To Render Equipment Inoperative

*a. Mechanical Means.* Use sledge hammers, crowbars, picks, axes, or any other heavy tools which may be available, together with tools normally included with the snow removal unit to destroy the following:

(1) Carrier transmission housing.
(2) Power transfer housing.
(3) Plow transmission housing.
(4) Carrier engine fuel pump, carburetor, distributor, governor, water pump, air compressor, block, and manifold.
(5) Plow engine fuel pump, carburetor, magnetos, governor, water pumps, cylinder block, crankcase and manifolds.
(6) Controls and instruments.

*Note.* The above steps are minimum requirements for this method.

(7) Carrier propeller shafts.
(8) Tires and wheels.
(9) Engine starting motors.
(10) Carrier engine alternator.
(11) Engine radiator.
(12) Fuel tanks.

*b. Misuse.*

(1) Drain radiator and engine crankcase. Put sand, gravel, nuts, bolts, screws, or broken glass in the oil filter tube.
(2) Disconnect radiator fan and run engine at full throttle.

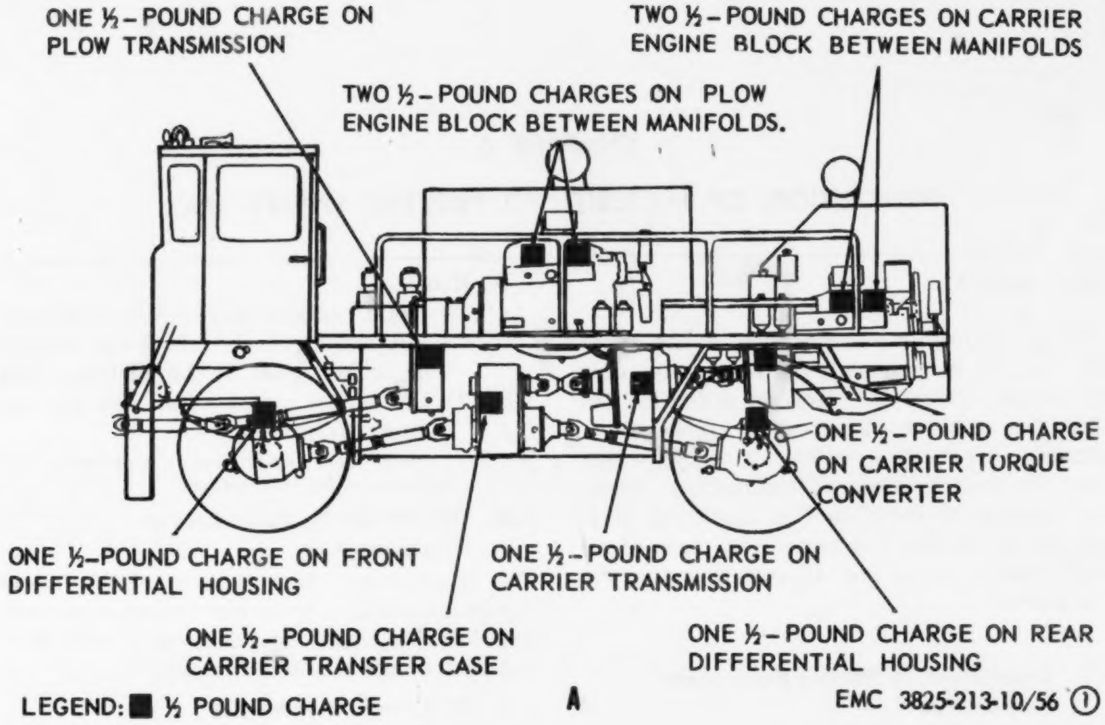
*Note.* The above steps are minimum requirements for this method.

## 126. Demolition by Explosives or Weapons Fire

*a. Explosives.* Place as many of the following charges (fig. 56) as the situation permits and detonate them simultaneously with detonating cord and a suitable detonator.

(1) *Carrier assembly.*
  (*a*) One 1/2-pound charge on front differential housing.
  (*b*) One 1/2-pound charge on carrier transfer case.
  (*c*) One 1/2-pound charge on carrier transmission.
  (*d*) One 1/2-pound charge on rear differential housing.
  (*e*) One 1/2-pound charge on carrier torque converter.
  (*f*) Two 1/2-pound charges on carrier engine block between manifolds.
  (*g*) Two 1/2-pound charges on plow engine block between manifolds.
  (*h*) One 1/2-pound charge on plow transmission.
(2) *Plow assembly.*
  (*a*) One 1/2-pound charge on middle auger bearing.
  (*b*) One 1/2-pound charge under fan gearcase.

*b. Weapons Fire.* Fire on the snow removal unit with the heaviest practical weapons available.


ONE ½ - POUND CHARGE ON PLOW TRANSMISSION
TWO ½ - POUND CHARGES ON CARRIER ENGINE BLOCK BETWEEN MANIFOLDS
TWO ½ - POUND CHARGES ON PLOW ENGINE BLOCK BETWEEN MANIFOLDS.
ONE ½ - POUND CHARGE ON CARRIER TORQUE CONVERTER
ONE ½-POUND CHARGE ON FRONT DIFFERENTIAL HOUSING
ONE ½ - POUND CHARGE ON CARRIER TRANSMISSION
ONE ½ - POUND CHARGE ON CARRIER TRANSFER CASE
ONE ½ - POUND CHARGE ON REAR DIFFERENTIAL HOUSING
LEGEND: ■ ½ POUND CHARGE
A
EMC 3825-213-10/56 ①

A. Carrier assembly

*Figure 56. Placement of charges.*

## 127. Other Demolition Methods

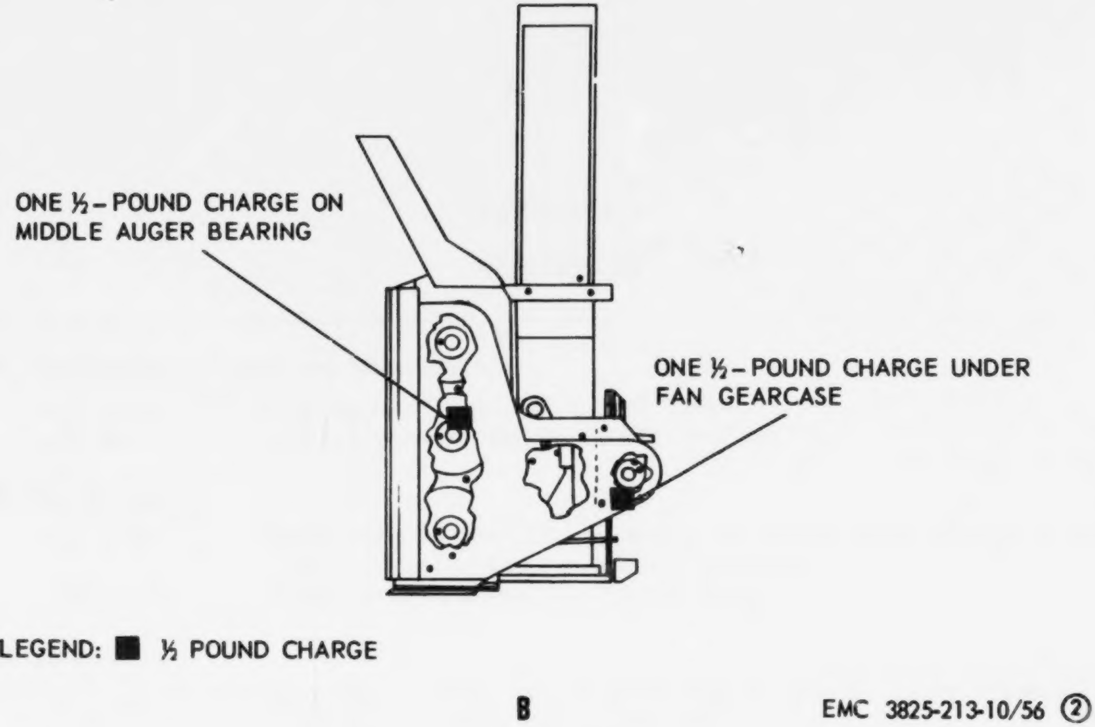
*a. Scattering and Concealment.* Remove all easily accessible parts such as the carburetor, fuel pump, distributor, governor, alternator, and spark plugs. Scatter these parts through dense foliage, bury them in dirt or sand, or throw them in a lake, well, stream, or other body of water.

*b. Burning.* Pack rags, clothing, or canvas under, around, and inside the engines. Saturate this packing with gasoline, oil, or diesel fuel, and ignite.

*c. Submersion.* Drive the unit into a body of water to provide some water damage and concealment. Salt water will do the greatest damage to vital parts.

## 128. Training

All operators should receive thorough training in the destruction of the snow removal unit. Refer to FM 5-25. Simulated destruction, using all of the methods listed above, should be included in the operator training program. It must be emphasized in training, that demolition operations are usually necessitated by critical situations when time available for carrying out instructions is limited. For this reason, it is necessary that operators be thoroughly familiar with all methods of destruction of equipment and be able to carry out demolition instructions without reference to this or any other manual.


ONE ½-POUND CHARGE ON MIDDLE AUGER BEARING
ONE ½-POUND CHARGE UNDER FAN GEARCASE
LEGEND: ■ ½ POUND CHARGE
B
EMC 3825-213-10/56 ②

B. Plow assembly

*Figure 56*—Continued.

# APPENDIX I

# REFERENCES

## 1. Dictionaries of Terms and Abbreviations

| | |
|---|---|
| AR 320–5 | Dictionary of United States Army Terms. |
| AR 320–50 | Authorized Abbreviations and Brevity Codes. |

## 2. Fire Protection

| | |
|---|---|
| TM 5–687 | Repairs and Utilities: Fire Protection Equipment and Appliances: Inspection, Operations and Preventive Maintenance. |
| TM 9–1799 | Ordnance Maintenance Fire Extinquishers. |

## 3. Lubrication

| | |
|---|---|
| LO 5–3825–213–20 | Snow Removal Unit, Self-Propelled: Gasoline Driven; Rotary; Wheel MTD; Winterized (FWD Model S–349–V). |

## 4. Preventive Maintenance

| | |
|---|---|
| AR 750–50 | Maintenance Responsibilities and Shop Operation. |
| TB ENG 347 | Winterization Techniques for Engineer Equipment. |
| TM 5–505 | Maintenance of Engineer Equipment. |
| TM 9–6140–200–15 | Storage Batteries, Lead Acid Types. |

## 5. Publication Indexes

| | |
|---|---|
| DA Pam 310–4 | Index of Technical Manuals, Technical Bulletins, Lubrication Orders, and Modification Work Orders. |

## 6. Supply Publications

| | |
|---|---|
| SM 10–1–C4–1 | Petroleum, Petroleum Base Products, and Related Material. |

## 7. Painting

| | |
|---|---|
| TB ENG 60 | Preservation and Painting of Serviceable Corp of Engineers Equipment. |

## 8. Training Aids

| | |
|---|---|
| FM 5–25 | Explosives and Demolition. |

# APPENDIX II

# BASIC ISSUE ITEMS

## Section I. INTRODUCTION

### 1. General

Section II lists the accessories, tools, and publications required in 1st echelon maintenance and operation, initially issued with, or authorized for the snow removal unit.

### 2. Explanation of Columns

*a. Source Codes.*

(1) *Technical service.* This column lists the basic number of technical service assigned supply responsibility for the part. Blank spaces denote Corps of Engineers supply responsibility. General Engineer supply parts are identified by the letters GE in parentheses, following the nomenclature in the description column. Other technical services basic numbers are—

9—Ordnance Corps
10—Quartermaster Corps
12—Adjutant General's Corps

(2) *Source.* The selection status and source of supply for each part are indicated by one of the following code symbols:

(*a*) P— applied to high mortality repair parts which are stocked in or supplied from the technical service depot system, and authorized for use at indicated maintenance echelons.

(*b*) P1—applied to repair parts which are low mortality parts, stocked in or supplied from technical service depots, and authorized for installation at indicated maintenance echelons.

(3) *Maintenance.* The lowest maintenance echelon authorized to use, stock, install, or manufacture the part is indicated by the following code symbol:

O—Organizational Maintenance
(1st and 2d Echelon)

*b. Federal Stock Numbers.* When a Federal stock number is available for a part, it will be shown in this column, and used for requisitioning purposes.

*c. Description.*

(1) The item name and a brief description of the part are shown.

(2) A five-digit Federal supply code for manufacturers and/or other technical services is shown in parentheses followed by the manufacturer's part number. This number will be used for requisitioning purposes when no Federal stock number is indicated in the Federal stock number column. *Example:* (33844) 16161

(3) The letters GE shown in parentheses immediately following the description, indicate General Engineer supply responsibility for the part.

*d. Unit of Issue.* Where no abbreviation is shown in this column, the unit of issue is "each."

*e. Expendability.* Those items classified as nonexpendable are indicated by letters NX. Items not indicated by NX are expendable.

*f. Quantity Authorized.* This column lists the quantities or repair parts, accessories, tools, or publications authorized for issue to the equipment operator or crew as required.

*g. Quantity Issued With Equipment.* This column lists the quantities of repair parts, accessories, tools, or publications that are initially issued with each item of equipment. Those indicated by an asterisk are to be requisitioned through normal supply channels as required.

*h. Illustrations.*

(1) *Figure number.* Provides the identifying number of the illustration.

(2) *Item number.* Provides the referenced number for the part shown in the illustration.

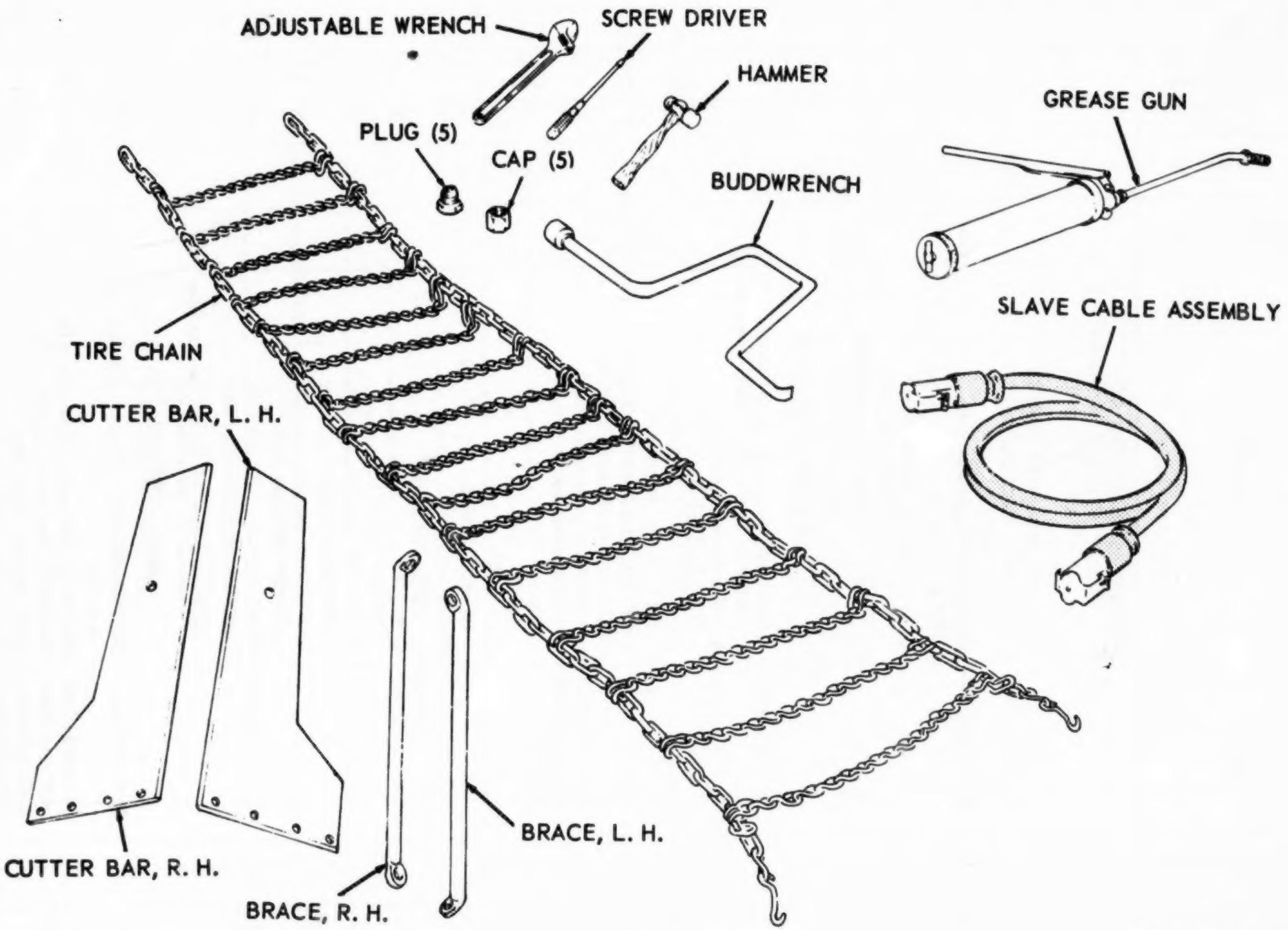
## 3. Federal Supply Code for Manufacturers

23382—Four Wheel Drive Auto Co.

33844—Klauer Mfg. Co.

## 4. Comments and Suggestions

Suggestions and recommendations for changes to the basic issue items list will be submitted on DA Form 2028 to the Commanding General, Military Construction Supply Agency/U.S. Army Engineer Maintenance Center, Corps of Engineers, ATTN: MCSDM, P.O. Box 119, Columbus 16, Ohio. Direct communication is authorized.


ADJUSTABLE WRENCH
SCREW DRIVER
HAMMER
GREASE GUN
PLUG (5)
CAP (5)
BUDDWRENCH
SLAVE CABLE ASSEMBLY
TIRE CHAIN
CUTTER BAR, L. H.
CUTTER BAR, R. H.
BRACE, L. H.
BRACE, R. H.

EMC 3825-213-10/57

*Figure 57. Basic issue items.*

## Section II. BASIC ISSUE ITEMS LIST

| Source codes | | | | Federal stock No. | Description | Unit of issue | Expendability | Quantity authorized | Quantity issued with equipment | Illustration | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Technical service | Source | Maintenance | Recoverability | | | | | | | Fig. No. | Item No. |
| | | | | | GROUP 06—ELECTRICAL SYSTEM (ENGINE AND VEHICULAR) | | | | | | |
| | | | | | 0612—BATTERIES | | | | | | |
| 9 | P | O | ---- | 6140–057–2554 | BATTERY, STORAGE: 12 volts, 6 cell. | ---- | NX | 4 | 4 | | |
| 9 | P | O | ---- | 6810–264–9063 | SULPHURIC ACID: electrolyte. | GAL | --- | 7 | 7 | | |
| | | | | | GROUP 26—ACCESSORIES, PUBLICATIONS TEST EQUIPMENT AND TOOLS | | | | | | |
| | | | | | 2602.1—ACCESSORIES | | | | | | |
| 10 | P | O | ---- | 7520–559–9618 | CASE: operation and maintenance publications, cotton duck, water repellent and mildew resistant MIL–B–11743–B | ---- | --- | 1 | 1 | | |
| 10 | X2 | O | ---- | ------------- | SLAVE CABLE ASSEMBLY (23382) 195882 | ---- | --- | 1 | (*) | 57 | |
| 10 | P | O | ---- | ------------- | CUTTER BLADE FOR PLOW: left-hand, right-hand (33844). | ---- | --- | 2 | (*) | | |
| 5 | -- | -- | ---- | 3825–351–0867 | 16161—right-hand | | | | | | |
| 5 | -- | -- | ---- | 3825–431–1766 | 16162—left-hand | | | | | | |
| 10 | P | O | ---- | 2540–054–0031 | TIRE CHAINS (23382) 2296–SH | ---- | ---- | 4 | (*) | 57 | |
| 10 | X2 | O | ---- | ------------- | CAP 5/16" (23382) 10615564 | ---- | ---- | 1 | 1 | 57 | |
| 10 | X2 | O | ---- | ------------- | PLUG 5/16" (23382) 10615566 | ---- | ---- | 1 | 1 | 57 | |
| 10 | X2 | O | ---- | ------------- | CAP 3/8" (23382) 10615411 | ---- | ---- | 2 | 2 | 57 | |
| 10 | X2 | O | ---- | ------------- | PLUG 3/8" (23382) 10615567 | ---- | ---- | 2 | 2 | 57 | |
| 10 | X2 | O | ---- | ------------- | CAP 1/2" (23382) 10615565 | ---- | ---- | 2 | 2 | 57 | |
| 10 | X2 | O | ---- | ------------- | PLUG 1/2" (23382) 10615568 | ---- | ---- | 2 | 2 | 57 | |
| | | | | | The above 6 items are for use when the front axle is removed for Berne clearance. | | | | | | |
| | | | | | 2602.2–COMMON TOOLS | | | | | | |
| 9 | P | O | ---- | 5120–277–9491 | SCREWDRIVER, FLAT: 1/4 in. tip 9 in. lg. | ---- | ---- | 1 | (*) | | |
| 10 | P | O | ---- | 5120–240–5328 | WRENCH, open end, adjustable, 8 in. | ---- | ---- | 1 | (*) | | |
| 10 | P | O | ---- | 5120–243–2963 | HAMMER, ball peen 1–1/2 lb. | | | | | | |
| 10 | P | O | ---- | 4930–360–2801 | GUN, grease, lever type. | ---- | ---- | 1 | (*) | | |
| 10 | P | O | ---- | 5120–473–6541 | WRENCH, wheel stud nut | ---- | ---- | 1 | (*) | 57 | |

| Source codes | | | | Federal stock No. | Description | Unit of issue | Expendability | Quantity authorized | Quantity issued with equipment | Illustration | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Technical service | Source | Maintenance | Recoverability | | | | | | | Fig. No. | Item No. |
| | | | | | 2602.4—PUBLICATIONS | | | | | | |
| 12 | -- | -- | ---- | -------------- | DEPARTMENT OF THE ARMY LUBRICATION ORDER<br>LO 5-3825-213-20. | | | 1 | 1 | | |
| 12 | -- | -- | ---- | -------------- | DEPARTMENT OF THE ARMY OPERATOR'S TECHNICAL MANUAL<br>TM 5-3825-213-10. | --- | ---- | 2 | 2 | | |
| 12 | -- | -- | -- | -------------- | DEPARTMENT OF THE ARMY ORGANIZATIONAL MAINTENANCE MANUAL<br>TM 5-3825-213-20. | --- | ---- | 2 | 2 | | |
| 12 | -- | -- | -- | -------------- | DEPARTMENT OF THE ARMY ORGANIZATIONAL MAINTENANCE REPAIR PARTS AND SPECIAL TOOL LISTS MANUAL<br>TM 5-3825-213-20P. | --- | ---- | 2 | 2 | | |
| | | | | | GROUP 76—FIRE FIGHTING EQUIPMENT | | | | | | |
| | | | | | 7603—FIRE EXTINGUISHERS | | | | | | |
| | P1 | O | -- | 4210-202-7858 | EXTINGUISHER, FIRE, CARBON DIOXIDE: charged, hand, nonshatterable cylinder, permanent shutoff valve, squeeze grip control, 15 lbs<br>MIL Spec E-468-C<br>Type 1, Class 1. (GE) | --- | ---- | 1 | 1 | | |
| | P1 | O | ---- | 4210-383-7129 | EXTINGUISHER, FIRE, CARBON DIOXIDE: charged, hand, nonshatterable cylinder, permanent shutoff valve, squeeze grip or trigger control 5 lbs<br>MIL Spec E-468-C<br>Type 1, Class 1. (GE) | | | See note. | | | |
| | P1 | O | ---- | 4210-555-8837 | EXTINGUISHER, FIRE MONOBROMOTRIFLUOROMETHANE: charged, hand-shatterable cylinder, penetrating seal valve, stored pressure, w/bracket, 2.75 lbs<br>(Halon-1301)<br>MIL Spec E-52031. (GE) | ---- | ---- | 1 | 1 | | |

| Source codes | | | | Federal stock No. | Description | Unit of issue | Expendability | Quantity authorized | Quantity issued with equipment | Illustration | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Technical service | Source | Maintenance | Recoverability | | | | | | | Fig. No. | Item No. |
| | P | O | ---- | 4210–708–0031 | CYLINDER, FIRE EXTINGUISHER: charged; 2.75 lb monobromotrifluoromethane; pressurized w/nitrogen or air; red body, shade 1136 MIL Spec–T–707. (GE) | ---- | ---- | 1 | (*) | | |
| | P | O | ---- | 4210–779–3516 | SEAL, FIRE EXTINGUISHER, SELF-LOCKING Stoffel Seals Corp. SEL–1 or equal (GE)<br>*Note.* Requisiton $CO_2$ extinguisher until depot stocks are exhausted | ---- | ---- | 1 | (*) | | |

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